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Pharmacists Have Responsibilities of Service and Also Duties Which Include Making the Public Acquainted with Pharmacy, Its Mission and Its Part in the Life of the State and Nation.

Vol. XVIII, No. 2 FEBRUARY, 1929

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 77th ANNUAL MEETING WILL BE HELD AT RAPID CITY (BLACK HILLS), SOUTH DAKOTA, DURING WEEK OF AUGUST 26, 1929.

F. W. Brown, Lead, So. Dak., Local Secretary

The 1929 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conferences of Pharmaceutical Association Secretaries will also be held at Rapid City, same time and place.

For Association Roster and Roster of the Boards of Pharmacy, of Officers of Pharmaceutical Associations, Local Branches, see pages x, xii, xiv, etc.

Entered as second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917; authorized July 10, 1918.

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EDUCATION.

THE foundation upon which the profession of pharmacy is built is well known to be that of education; yet with that well-known fact in our minds we allow ourselves to be influenced by too many side issues.

As we of the pharmaceutical profession go from place to place, observation so frequently brings to our attention the successful blending of kindred spirits representing the educational side, both in Pharmacy and Medicine. These people are frequently found working together in out-of-the-way places. The education you find in these places may not have had its origin within college walls, but in the blending together of common interests and their accomplishments and mutually solving their daily problems.

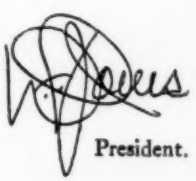
If those whose routing to Rapid City takes them across the Missouri at Pierre were to stop, they would find there a store established in the pioneer days, and known as the "Black Hawk Pharmacy." The man who established this store had been for years a west-river freighter. He was a real student, and here he associated himself, with the idea of *serving* the public, with a physician. They attracted the attention of those in need of their services, far and wide.

This pharmacist was able to acquaint himself with the best materials that the market afforded; his shelves were stocked with the latest and most up-to-date materials; his reading was of such a character that he became known as an educated man. One might find here and there many such individuals.

These are in contrast to another prominent center (and the program of the ASSOCIATION provides for a half-day stopover at Rochester, Minnesota). In Rochester you may find the highly educated, both in Pharmacy and Medicine. Here you will become lost in the maze of passages in the Clinic store, and find various other types of stores suited to all types of people.

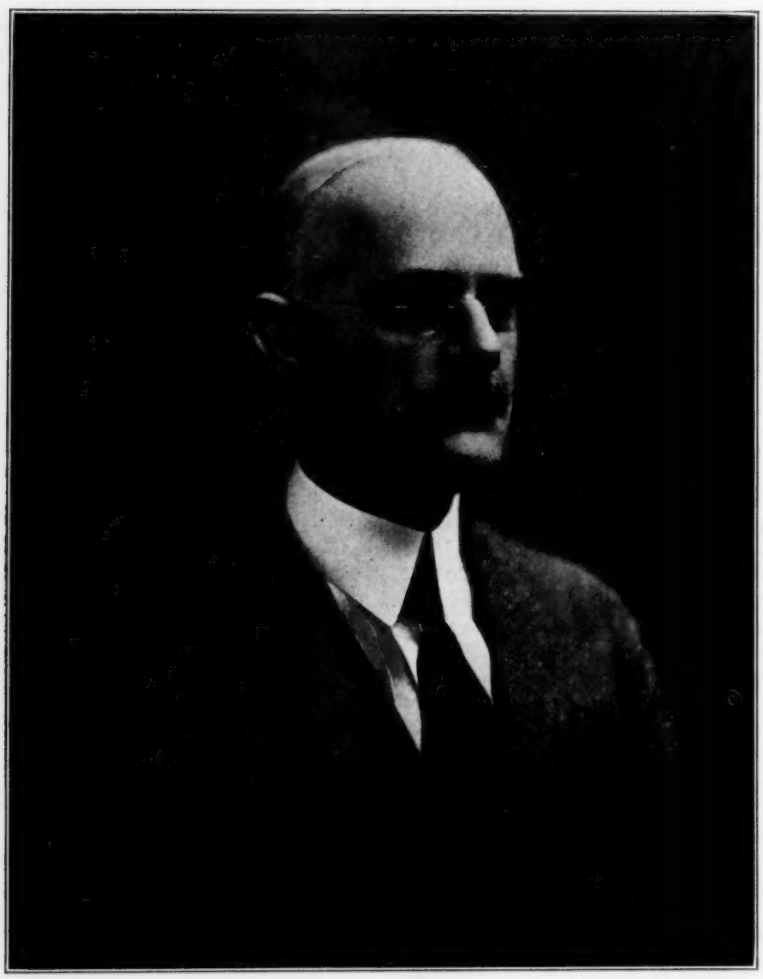
On the one hand, the pioneer pharmacist of Pierre—educated by his studious attention and adaptation to conditions, combined with observation and judgment, on the hard road of experience. On the other, men trained in their work by the use of the best and most modern means to-day possible. Each is educated; each by his own aggressiveness in mastering the use of the knowledge available. That mastery *is* education. Education is not to be had by the mere serving of time in place.

Thus do we find in these illustrations, which exist not so far apart in a country having similar needs, the types that prove that to become successful in things pharmaceutical—education must enter and play its important part. Might I say—the most important part.



President.

Watertown, S. D., February 1929.



Courtesy of Marceau

AMBROSE HUNSBERGER.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XVIII FEBRUARY, 1929 No. 2

AMBROSE HUNSBERGER.

The Chairman of the House of Delegates, A. PH. A., was an intimate associate of the late Martin I. Wilbert, whom he succeeded as Secretary of the Philadelphia Branch, A. PH. A. After serving in the latter capacity for three years, he was elected President of the Branch. As an associate fellow of the American Medical Association, he is well and favorably known to the physicians of Pennsylvania; he has their confidence and constantly keeps in mind the importance of coöperation between physicians, dentists, chemists and pharmacists. This coöperative effort was noticeable during his year of office, as President of Pennsylvania Pharmaceutical Association, when the groups mentioned were represented on the Convention program of the former. This influence was also apparent during the war in bringing about coöperation of the groups in the National Pharmaceutical Service Association, and is evidenced in the occasional meetings of representatives of these branches of medicine and science for the discussion of subjects that have mutual interest and value.

Chairman Hunsberger emphasizes the importance of pharmacy and studies its details; his familiarity with these, in his practice, commended him for the office to which he was appointed three years ago, namely, Assistant Federal Prohibition Administrator (Permissive) in the Philadelphia Office, and its administration reflects his knowledge of the legitimate uses of alcohol and spirituous liquors; thereby the interests of the Government are safeguarded, with due consideration of the law-abiding permittees.

Mr. Hunsberger is an alumnus of the Philadelphia College of Pharmacy and Science, its secretary and a member of the Board of Trustees. He took an active part in the expansion program of the institution which culminated in the erection of the new college building.

He is a member of the local association of Retail Druggists and of the National Association of Retail Druggists and, in both of these bodies, has served as president and member of the respective Executive Committees, and in other official capaci-

ties. For about a decade he has represented the N. A. R. D. at the meetings of the National Drug Trade Conference and in the Chamber of Commerce of the United States.

Last year Mr. Hunsberger was First Vice-President of the A. PH. A.; at the meeting in Philadelphia he was eminently successful as Local Chairman, and during the previous year as Chairman of the Section on Commercial Interests. He served as Chairman of the Committee on Resolutions of the House of Delegates, A. PH. A. at the last two meetings of the ASSOCIATION.

In all of these activities and functions he has exhibited a judgment whereby the ASSOCIATION has profited, and an understanding of details has characterized his work.

FIRST AID WEEK MARCH 17TH–23RD.

Beautiful and appropriate window displays for distribution to retail druggists have been prepared by the National Wholesale Druggists' Association, under the direction of Chairman R. B. Whittlesey of the N. W. D. A., Committee on Education and Research. The sample displays were recently submitted before a meeting of drug journal editors in New York and therefrom the most satisfactory were selected. Twenty thousand of these complete window displays are being delivered to wholesalers.

Ever since the Committee on Education and Research of the N. W. D. A. began to assist retailers by supplying both professional and commercial displays there has been an urgent demand that the center panels of the displays be mounted on cardboard. Chairman Whittlesey therefore arranged for the production of a beautiful picture lithographed in six colors and illustrating the "Good Samaritan"—the first "First Aid," as the center panel for the N. W. D. A. display. This center panel is mounted on cardboard with an easel back and is a real work of art, suitable for display in the drug store at all times. In addition to the center panel there are five other pieces also lithographed in colors. These consist of one top strip 41 x 9 inches, two side strips 31 x 9 inches and two smaller strips about 5 x 18 inches. The top and side strips carry pictures illustrating the importance of First Aid. The smaller strips carry slogans relating to the purchase of medicine chest and First Aid supplies.

There is no question but what the sales of First Aid Week supplies will be satisfactorily increased and the status of the pharmacists promoted if the coöperation is general and in line with the Committee's aims and purposes to serve pharmacy and pharmacists. The wholesalers will not only supply the displays but they will also send out a 4-page circular giving directions and lists of classes of merchandise which should be placed in the windows with the displays. The success of the Week, after all, depends upon the retailer. Perhaps the article on page 699 of the July number, 1928, of the JOUR. A. PH. A. will be of value—"First Aid Methods for Treating the Injured."

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

PUBLICITY FOR PHARMACY AND THE PHARMACY CORPS IN U. S. ARMY.

UNDER "Legal and Legislative" of this issue the Bill for a Pharmacy Corps in the U. S. Army, as introduced in the House by Congressman Clyde Kelly and in the Senate by Senator Royal S. Copeland, is printed. The earnestness of both of these legislators bespeaks success and may be accepted as encouraging. There has been a great deal of publicity for pharmacy of the right kind; there will be more and, with your help, the public will be made thoroughly acquainted with pharmacy; what it means, if it does not represent the right kind of pharmaceutical service; that its advancement is essential for public health, and is growing in importance.

Pharmacists have responsibilities of service and also duties which include making the public acquainted with pharmacy, its mission and its part in the life of the state and Nation. The latter statement implies that citizens are entitled to know what right pharmaceutical service signifies and what indifferent or unqualified service may mean. The individual can best work in the field for which he has been prepared; the activity is best served by those specially trained for it and, by pharmacy, those served thereby are safeguarded. As a preliminary to foregoing statements those of Dr. Nicholas Murray Butler may be added—"The first question to be asked in any course of study is—'Does it lead to a knowledge of our contemporary education? If not, it is neither efficient nor liberal.' " The latter applies to pharmacy in a general way as a part in the educational and training systems and indicates the progressive development which shapes the endeavors of these young men and women into a part of the related industries and professions. In that connection few activities have greater importance, because the work of pharmacists on the Standards of the Food and Drug laws and related legislation concerns the health and well-being of every individual, commerce and nearly every industry. It is a comprehensive and important relation and, therefore, every applicable means should be considered in promoting pharmacy.

Arguments presented herein are understood and can be enlarged upon by the readers, but they should reach the public and Congress, in particular. Substantiated, accurate and definite information along these lines will be most helpful in promoting the Bill for a Pharmacy Corps in the U. S. Army. Pharmacy seeks only the facts and these are for the purpose of acquainting Representatives and Senators, so that the need of an efficient Corps of Pharmacists will be impressed. Certainly, after a wait of many years, there can hardly be a charge of impatience.[1] In matters of this kind the Government is usually in the advance in its recommendations for educational requirements; herein pharmacy declares its desire and willingness to coöperate fully.

The AMERICAN PHARMACEUTICAL ASSOCIATION, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy have

[1] Those who seek information on prior efforts to establish a Pharmacy Corps in the U. S. Army should look through the pages of the volumes for 1917, 1918 and 1919 of the JOURNAL A. PH. A.

constantly in mind the promotion of pharmaceutical education and training; this requires no further comment, the advances made are in evidence. Plans are being shaped for making the resolutions of the Portland meeting for a study of pharmacy effective.[1] The Committee in charge was named in the January issue of the JOURNAL, page 87, and the members met during the last week of January for perfecting the necessary arrangements for the study. This is part of pharmacy's educational program and the recent action constitutes another progressive step taken by Pharmacy in the promotion of its service to the public, medicine and science.

MISLEADING METHODS AND STATEMENTS.

THERE may be a question relative to the right of sale control of a preparation for medicinal use, and it may not be unlawful to appropriate the advertising value paid for by another by placing on the market a preparation which in style of package resembles closely the original, if not in name, for the purpose of competition, but it may be questioned whether such a method is right in practice. The public is not advised of the facts in the case. Therein is an opportunity for the retailer and the wholesaler to exercise their judgment, of whether it is right or not.

Representatives of 6000 publishers of periodicals meeting in New York to devise ways of eliminating fraudulent advertising, adopted a resolution to the effect that the National Better Business Bureau be made the machinery through which the publishing industry would do its own policing of the periodical field. This action of the industry has now been accepted by the Federal Trade Commission as an expression of the trade, as shown in a statement to the industry.

It was proposed in the resolution adopted by the industry that the National Better Business Bureau, having expressed its willingness and ability to do so, advise periodical publishers and governmental agencies, whenever advertising is found to be fraudulent.

"INFLUENZA PREVENTIONS AND CURES."

In the Bulletin of January 16th from the Office of Information of the U. S. Department of Agriculture it is stated that "It is the intention of the Food, Drug and Insecticide Administration to take immediate action under the Food and Drugs Act against all preparations represented by labels or circulars accompanying the package as preventives or treatments of influenza, la grippe, pneumonia and related diseases," W. G. Campbell, Director of Regulatory Work of the United States Department of Agriculture, said to-day.

"There is a widespread and probably a fully justified public apprehension about influenza and some manufacturers have not hesitated to take advantage of this situation by advertising their preparations in every available quarter as preventives or cures for the disease. *Unfortunately, the Food and Drugs Act does not reach false advertising statements appearing in the press, or in any advertising medium not included with the package of the preparation itself. The food and drug enforcing authorities are therefore powerless to check such misleading advertising*, serious as the

[1] See Resolutions No. 16 and No. 18, page 933, September JOURNAL A. PH. A.

consequences may be in the case of those who are led to depend on such ineffective products and neglect the hygienic precautions recommended by public health authorities, such as isolation, rest, sleep, diet and proper ventilation."

NEWS ITEMS.

In this following paragraph a statement of lesser importance is considered and still, if it be a mis-statement, it should not be admitted as truth. In the January JOURNAL an article is reprinted, which is timely. Exaggerated statements are made relative to the percentage of drugs sold in drug stores. The small figure sometimes given may be correct, but unusual, and it may be true that the larger percentage given by some writers does not represent the sales of an average store.

The Druggists' Research Bureau is certainly conducting its investigation with a purpose of arriving at facts and not for sensational purposes. The results are studied carefully so as to arrive at certain conclusions.

Bulletin No. 5-A reports on toilet goods facts about a city residential drug store. Therein the items that may be classed as drugs, excluding toilet articles, average 78 per cent; certainly some toilet articles, a large percentage of them, can be classed as "legitimate" drug store items. Here is an individual report and an average of a large number of stores—the percentage does not differ to the extent some would have us believe.

FAIR TRADE BILL.

CONGRESSMAN CLYDE KELLY, on January 18th, spoke in support of the Capper-Kelly Fair Trade Bill (H. R. 11). The speech was comprehensive and analytical, and presented the important problem of destructive competition most forcefully. Those who have not read the speech should do so and express their views relative to the measure to their representatives in Congress; it may be assumed that those who have read the address responded promptly.

The Congressman brought the methods of destructive competition forcefully and clearly to the attention of Congress, and impressed his hearers with the effect on the independent business man and the social and business life of the country. Seldom has a more complete analysis been made of a subject than that embodied in the speech by Mr. Kelly, and he carefully applied the corrective aims embodied in the Bill; to read the address acquaints the reader with the methods of destructive competition and the results, the growth of the Chains, the increase of mergers and the elimination of independent dealers.

The resolution adopted by the AMERICAN PHARMACEUTICAL ASSOCIATION at the Portland meeting applying to resale price legislation is as follows:

WHEREAS, in order to prevent the operation and existence of hurtful trusts, combinations and monopolies in this country, it has been necessary to enact certain so-called anti-trust laws by the Congress of the United States, and

WHEREAS, the Courts have gradually, by their interpretation of these enactments, sought to prevent economic and orderly distribution of identified merchandise by business men of the country who have neither purpose nor ability to constitute a monopoly, and

WHEREAS, as a result of such interpretations, merchants and manufacturers have against their will been driven to a state of ruthless uneconomic and wasteful methods of distribution

which have resulted in vast damage and loss to all branches of our trade and commerce, obviously enhancing costs of distribution and creating a situation not paralleled in any other civilized country, and

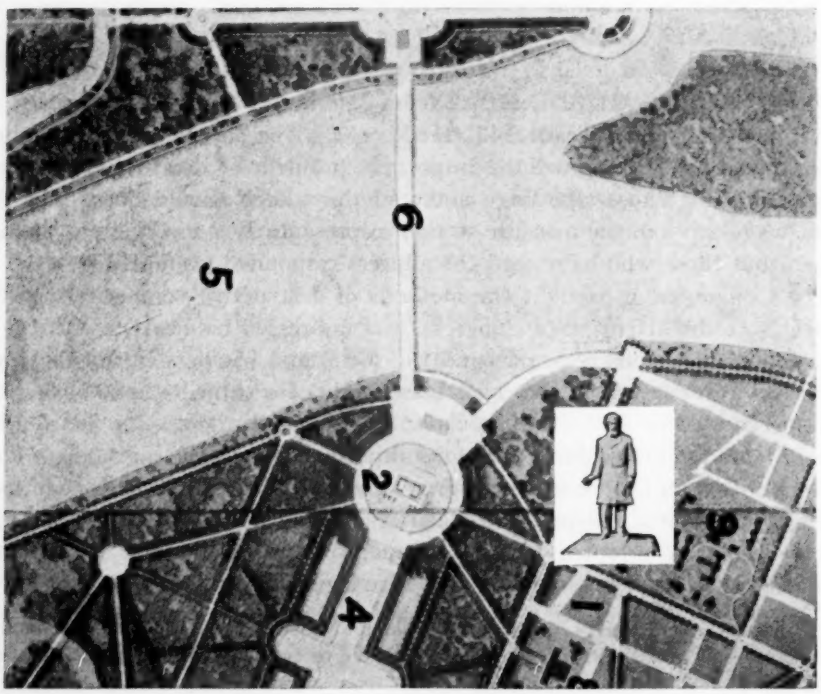
WHEREAS, it is our opinion that there should be remedial legislation looking towards the correction of present conditions,

Therefore, Be It Resolved, that the AMERICAN PHARMACEUTICAL ASSOCIATION, in convention assembled, respectfully urges upon our National Congress that consideration be given at the earliest possible moment to legislation giving relief to the industry of this country, and

Be It Further Resolved, that we heartily and unreservedly endorse the Capper-Kelly Bill, now pending (H. R. 11 and S. 1418), known as the Fair Trade Bill, legalizing the right of any producer of identified merchandise who is in fair and open competition with other producers of similar or competing merchandise, to enter into enforceable contracts, at wholesale or retail, or both, for the protection of resale prices upon his own identified merchandise.

Resolved Further that copies of this Resolution be transmitted to the President of the United States, to the Presiding Officer of the United States Senate, to the Speaker of the House of Representatives, to the Attorney-General of the United States, to the Secretary of Commerce, and to the individual members of the United States Senate Committees on the Judiciary and on Interstate Commerce and to the individual members of the House of Representatives Committees on Judiciary and on Interstate and Foreign Commerce, and

Be It Further Resolved, that a committee of this organization be appointed forthwith by the president and that said committee be, and hereby is empowered and directed to join with like committees appointed by the American Fair Trade Association and other industrial bodies with the views of making most effective the resolutions adopted by our Convention and to do any and all lawful things to make effective these resolutions.



SITE OF THE A. PH. A. HEADQUARTERS, WASHINGTON, D. C.

Fig. 1.—Under a proposed structure of William Procter, Jr., "Father of American Pharmacy," Pharmacy Headquarters' site; 2, Lincoln Memorial; 4, Mirror Lake; 5, Potomac River; 6, Arlington Memorial Bridge to Arlington National Cemetery; 8, National Academy of Sciences; 9, Naval Hospital Grounds.

SCIENTIFIC SECTION

1. RESPIRATORY TESTS FOR DETERMINING THE RATE OF OXYGEN METABOLISM.

BY ALBERT SCHNEIDER.*

The following tests were made by students taking the laboratory courses in physiology and pharmacology. The results of these tests which have now been made for three college terms will be summarized shortly.

All of the tests were made in the standing position. A watch with second hand is required. Deflate the lungs as completely as possible, and hold the breath as long as possible and note the time in seconds, from the moment when lungs were completely deflated up to the moment when respiration was resumed. Approximately the same degree of self-punishment must be imposed for each test. For the second test, expand (inflate) the lungs to the maximum, hold the breath and note time as for Test 1.

For Test 1, the time will range from 15 seconds to perhaps 50 seconds, and for Test 2, the time will range from 25 seconds to 90 seconds. The holding time varies with sex, age, height, surface area (of the body), nutrition, barometric pressure. In other words, the factors which influenced the metabolic rate also modify the time in seconds, in the tests outlined. Violent exercise, Basedow's disease, fevers, shorten the time greatly. After a meal the time is lengthened. In the morning immediately after rising from a night's sleep the time is much shortened.

It was found that the differences in time were but little influenced by differences in the degree of self-punishment, amounting to not more than a few seconds. The time may be prolonged through practice. Expert swimmers and divers have a good breath-holding capacity.

This comparatively simple test, in which no apparatus is required, can no doubt be made to take the place of the basal rate determinations by means of the cumbersome metabolors, with reduction in doctors' bills.

---

2. THE RUBBER BAND SKIN REACTION.

The reaction is made as follows. An ordinary rubber band, such as is used in stores and offices, is placed around the forearm, and the band drawn up to a distance of five to six inches, and allowed to snap back against the skin. Within a few seconds a red line will appear, soon followed by a raised ridge. The red line may endure from several hours to several weeks, before it will completely vanish. The skin elevation along the line of the skin traumatization soon diminishes to become inappreciable from one-half hour to several hours. This very striking skin reaction was made by students of the College in association with other skin reaction tests.

The reddening of the skin is due to the enlargement and engorgement of the

* The three papers—"Respiratory Tests for Determining the Fate of Oxygen Metabolism," "The Rubber Band Skin Reaction," "A Simple Spectroscopic Measure of Tissue Metabolism"—were presented to the Scientific Section, A. PH. A. at Portland, Me., by the late Dr. Albert Schneider.

capillaries, the result of the paralysis of the end plates of the nerve supply of the circular fibers of the capillaries. The ridging of the skin is largely due to the tonic contraction of the skin muscles, and to a slight degree also due to the engorgement of the capillaries.

The most notable feature of this reaction is the extreme variation in the duration of the erythema and also of the ridging of the skin. The following tentative explanation of the reaction is offered.

It may be a measure of calcium-potassium balance of the body, or of tissues. As is known, calcium deficiency tends toward muscular spasm, whereas potassium deficiency tends towards a lessening in the tonus of the involuntary muscles. Marked reddening along the line of the rubber band traumatization indicates lowered muscle tonus and calcium deficiency. If the ridging endures for comparatively short periods of time it indicates potassium deficiency. If the calcium-potassium balance is much disturbed, it is indicated by a long duration of the reddening and short period of ridging. These tentative interpretations of the reactions require verification. Also, the method of making the test must be standardized.

---

3. A SIMPLE SPECTROSCOPIC MEASURE OF TISSUE METABOLISM.

Tissue respiration in terms of the reduction of oxyhemoglobin to hemoglobin may be determined in a simple manner as follows. Clamp off the skin between thumb and index finger (*Schwimmhaut*) by means of a ready made clamp improvised from fairly heavy wire and a spring clothes pin. Bend one end of one wire into a ring having an internal diameter of one-fourth inch. The ring must be completely closed, and leave a stem about three inches long. Make a second ring with stem, in like manner. Securely fasten the stem ends to the blades of the clothes pin, in such manner that the two rings exactly oppose each other. Open the ring blades and clamp in position over the skin area indicated, and allow them to come together by the pressure of the clothes pin. The pressure will shut off the flow of blood within the compressed area. Hold the clamped-off area between the eye and a source of intense light, and at once examine by means of an ordinary hand spectroscope which was previously focussed upon the Frauenhofer lines, and note the time which elapses until the single oxyhemoglobin line changes to the double hemoglobin lines. The time varies with the amount of reserve tissue oxygen and also with the rate of oxygen metabolism in the tissues. Normally, the time ranges from 2.5 to 3.5 minutes. In Basedow's disease the time may be shortened to 30 seconds and less. In myxedema the time may be prolonged to five minutes. A stop-watch is convenient in making the tests.

The simplicity of the test should appeal to every physiologist, pharmacologist and clinician. The method is recommended as a substitute for the usual metabolic rate determinations. [Ernst Lucas, "Gewebsatmung bei Erkrankung des Stoffwechels der inneren Drüsen.," *Klinische Wochenschrift*, 7 (No. 21), May 20, 1928.]

EDITOR'S NOTE: The papers were presented by title and there was no discussion.

NORTH PACIFIC COLLEGE OF OREGON,
PORTLAND, OREGON.

FACTORS INFLUENCING CALCIUM BALANCE.*

II. INFLUENCE OF POTENTIAL ALKALINITY ON THE UTILIZATION OF SUPPLEMENTARY CALCIUM LACTATE IN YOUNG RACHITIC RATS.

BY VERSA V. COLE, JOHN H. SPEER AND FREDERICK W. HEYL.

In the preceding paper† (1), the effect of potential alkalinity on the utilization of supplementary calcium lactate was demonstrated in mature rats which had suffered a previous drain of their inorganic salt reserve. In order to confirm the results there reported, we chose young rachitic rats for further work in this field. These animals had been fed on Steenbock's diet No. 2965 for twenty-one days after weaning, by which time severe rickets invariably resulted. They were then placed on either of the following basal diets with additions of calcium lactate and sodium citrate as noted under each experiment, for from one to three weeks before metabolism experiments were begun. This was found necessary, since the rats were at first too weak and variable in the amount of food eaten to furnish reliable data. The object of this feeding was to study rats in the process of recuperation from the severe pathological condition of rickets. Subsequent histological examination of the leg bones showed such recuperation was taking place.

EXPERIMENTAL.

Diet A.		*Analysis.*	
Ground yellow corn	78	Ca	0.021%
Wheat gluten	21	P	0.29
Sodium chloride	1	Mg	0.12
	100	Calculated acidity	177 cc.
		0.1 *N* acid per	100 Gm.

Diet B was the starch-casein diet described in the preceeding paper.

The technique was much the same as in the work on the mature rats, except (1) metabolism periods were seven days, (2) two rats were kept in each cage, all data being reported per cage, (3) cod-liver oil was given only where noted, (4) the salt increments were incorporated in the main body of the ration, since the rats refused to eat them when diluted with only a small amount of starch.

We might add that a considerable further number of balances than are here reported have been completed; the tables have been condensed, for the sake of clarity, to those animals which ate most uniformly and adequately. We consider the food intake as more or less of a criterion of the vitality of the test animal.

Two experiments were run using Diet A to contrast the mineral retention on an acidotic and alkaline ration. The alkalinity was produced by adding 500 mg. sodium citrate per cage per day, while the control rats received none. The first series was given 30 mg. calcium as lactate per day; the second received 45 mg. per day plus 1 mg. cod-liver oil. Data are given in Table I. In both cases there is a marked increase in both calcium and magnesium retention on the alkaline ration while only in the second series is there any significant difference in the phosphorus retention.

---

* Scientific Section, A. PH. A., Portland meeting, 1928.

† January JOUR. A. PH. A., XVIII (1929), 36.

Parallel with these experiments, we ran two others, using Diet A again, to determine the effect of alkalization in overcoming the effects of a less favorable Ca:P ratio. The phosphorus in the first-mentioned experiments was all carried by the basal diet, chiefly in the casein, but even that was still in excess of the amount necessary to give, with the added calcium, the ideal ratio of 1.9:1 (Ca:P in $Ca_3(PO_4)_2$). This time we added Na_2HPO_4 to make that ratio even less favorable, and enough

TABLE I.—DATA FOR SEVEN-DAY PERIODS.

Cage.	Weight beginning. *Gm.*	Weight end. *Gm.*	Food intake. *Gm.*	Total acidity. *Cc.0.1 N acid.*	Ca addition. *Mg.*	Ca balance. *Mg.*	Ca retention. *Per cent.*	P balance. *Mg.*	P retention. *Per cent.*	Ca:P intake.	Ca:P retained.	Mg balance. *Mg.*
	66	66										
1	68	71	72	−229[1]	210	+ 97.7	43.4	+ 92	41.2	1.03	1.06	+19.1
	57	63										
2	68	74	75	−224	210	+129	57.2	+ 88	37.8	0.97	1.47	+32.6
	65	66										
3	67	73	78	+138	210	+ 77.7	34.3	+ 89	36.8	0.94	0.88	+ 8.8
	68	77										
4	74	81	81	−214	315	+154.5	46.5	+114	48.7	1.41	1.35	+20.2
	64	70										
5	75	83	79	−217	315	+150.9	45.5	+112	48.9	1.45	1.34	+14.8
	55	59										
6	61	70	81	+143	315	+103.2	31.1	+ 85	36.1	1.41	1.22	− 5.6
	62	66										
7	66	73	81	+143	315	+118.4	35.6	+ 77	32.6	1.41	1.54	+ 0.5

[1] In computing total acidity of the diet, the added calcium lactate was assumed to have no alkalizing influence. We have been unable to find any authority either way on this point. If calcium lactate should be proved to be a potent alkalizer, all the diets will be more alkaline than shown, but the differences shown in this paper will stand, since all comparisons are made between rats receiving the same amount of calcium. (+) denotes acidity, (−) is alkalinity.

TABLE II.—DATA FOR SEVEN-DAY PERIODS.

Cage.	Weight beginning. *Gm.*	Weight end. *Gm.*	Food intake. *Gm.*	Total acidity. *Cc.0.1 N acid.*	Ca addition. *Mg.*	Ca balance. *Mg.*	Ca retention. *Per cent.*	P balance. *Mg.*	P retention. *Per cent.*	Ca:P intake.	Ca:P retained.	Mg balance. *Mg.*
	64	68										
10	51	55	67	+17	210	+ 74.7	33.3	+ 74	24.7	0.75[1]	1.01	+18
	61	63										
11	65	69	69	+14	210	+ 80.5	35.9	+ 75	24.5	0.74	1.07	+23
	51	56										
12	46	50	66	+19	210	+ 84.7	37.9	+ 90	30.4	0.75	0.94	+26
	72	87										
13	55	67	82	−48	315	+121.8	36.7	+101	26.8	0.88[2]	1.20	+29
	68	75										
14	69	75	80	−51	315	+139.4	42.0	+ 96	25.8	0.89	1.45	+26
	58	66										
15	53	60	71	−67	315	+137.6	41.8	+ 86	24.8	0.95	0.95	+26

[1] Seventy mg. Na_2HPO_4 per day added to basal diet.
[2] One hundred mg. Na_2HPO_4 per day added to basal diet.

alkali to make the diets approximately neutral. Data are given in Table II. The controls reported in Table I served for this series also, since the conditions were in all other respects the same. It is quite apparent from the results that even incomplete alkalization produces better mineral retention than is shown by the acidotic controls in spite of the less favorable Ca:P ratio of the former.

In view of the recent work of Heyl and Hart (2) where they showed that milk was about 2.5 times as efficient as calcium lactate as a source of lime, the question next arose whether sodium alone was as efficient a base as a mixture of sodium and potassium as found in milk ash. Accordingly, to a group of rats on Diet B, enough calcium lactate was added to the diet to give a Ca:P ratio of 1.9. To one-third of these (cages 20 and 21) sodium citrate was added to make the diet neutral; a second series (cages 22 and 23) received a mixture of sodium and potassium citrates in the milk ash (3) ratio and in amount equivalent to the sodium given the first group; the rest received the acidotic diet alone. Results are shown in Table III. Again the acidotic rats showed the lowest retention, while those receiving as alkali the sodium alone showed the best. The increased intake of potassium deflected a somewhat greater phosphorus retention to the tissues (4), which in turn reduced that available for depositing calcium as phosphate in the bones.

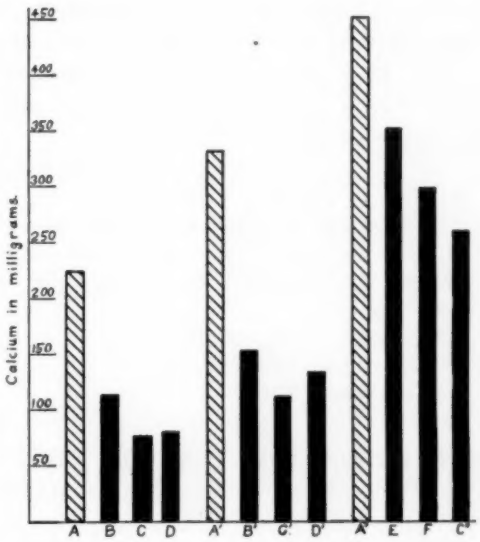


Fig. 1.—Graphic representation of the data given in Tables I to III. Bars A, A′, A″, are to represent average calcium intake. B and B′ are the average retention of the alkalized rats; C, C′ and C″, the retention of the acidotic controls; D and D′, the retention of those which received the added phosphate. Bar E represents the rats receiving sodium citrate, contrasted with bar F for those receiving a mixture of sodium and potassium citrates.

The experimental results are shown graphically in Fig. 1.

SUMMARY.

1. Base-forming or neutral diets are more favorable to calcium retention than an acidotic diet.

TABLE III.—DATA FOR SEVEN-DAY PERIODS.

Cage.	Weight beginning. *Gm.*	Weight end. *Gm.*	Food intake. *Gm.*	Total acidity. *Cc.0.1 N acid.*	Ca intake. *Mg.*	Ca balance. *Mg.*	Ca retention. *Per cent.*	P balance. *Mg.*	P retention. *Per cent.*	Ca:P intake.	Ca:P retained.	Mg balance. *Mg.*
	70	77										
20	81	85	92	± 0	452	+359	79.4	+105	44.8	1.9	3.38	+18.1
	79	84										
21	83	93	92	± 0	452	+344	75.8	+144	60.4	1.9	2.38	+ 7.8
	87	92										
22	67	71	92	± 0	452	+304	67.4	+150	61.8	1.9	2.03	− 4.0
	75	83										
23	75	83	92	± 0	452	+290	64.0	+133	55.4	1.9	2.18	− 3.0
	62	68										
24	81	82	92	+168	452	+236	52.2	+109	45.7	1.9	2.16	− 3.4
	64	65										
25	75	79	94	+172	460	+289	58.1	+ 95	38.8	1.9	3.05	− 1.8
	68	75										
26	62	71	92	+168	452	+250	55.0	+141	58.9	1.9	1.77	+ 6.3

2. Addition of potential alkalinity more than offsets a less favorable Ca:P ratio, showing better Ca retention than the acidotic controls.

3. Base-forming diets favor magnesium, and probably phosphorus, retention.

4. At a constant level of phosphorus intake, potassium acts somewhat antagonistic to calcium.

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THE $CuSO_4$-NaOH TEST OF EPHEDRINE ISOMERS AND RELATED COMPOUNDS.*

BY K. K. CHEN.[1]

The $CuSO_4$-NaOH test for natural ephedrine was first described by Nagai (1). The reaction was further investigated by Chen and Kao (2), and adopted as one of the standard tests for natural ephedrine by the Council on Pharmacy and Chemistry of the American Medical Association in "New and Non-official Remedies" (3). Upon the suggestion of Chen and Kao, Feng (4) attempted to devise a method for the chemical assay of ephedrine and pseudoephedrine by the use of the same test. Recently the writer has made a pharmacological study of 24 ephedrine homologs and isomers, the results of which will appear elsewhere. Incidently a $CuSO_4$-NaOH test was made with each of these compounds, together with 3 other chemicals, tyramine, *p*-hydroxy-β-phenyl-β-hydroxy-ethyl-methylamine (sympatol) and epinephrine. The results of the test are presented in this communication.

Of the 27 compounds as shown in Table I, Nos. 3, 4, 13, 15, 16, 17, 18, 19, 22, 23 and 24 were synthesized and supplied by Professor Adams (5), Nos. 14 and 20 by Doctor Manske and Professor Johnson (6), No. 2 by Doctor Alles (7) and No. 21 by Professor Tiffeneau (8). Nos. 5 and 12 are new alkaloids, isolated from Ma Huang and sent by Doctor Smith (9), (10) to the writer. No. 1 was synthesized for this work by Doctor C. H. Kao according to the method described by Noyes (11). No. 26 was supplied by Frederick Stearns and Company, Detroit. Nos. 25 and 27 were purchased on the market. Ephedrine, having 2 asymmetrical C-atoms, gives rise to 6 optical isomers. Five of them, Nos. 7, 8, 9, 10, 11, were prepared and supplied by E. Merck of Darmstadt, and Merck and Company, Rahway, New Jersey. The natural or *l*-ephedrine, No. 6, was prepared by the author himself (12). In the whole series, 5 compounds, Nos. 1, 2, 5, 21 and 25, are primary amines; 2, Nos. 12 and 23, tertiary amines; and the remaining 20, secondary amines. No. 15 is a ketone, No. 14 is a dialcohol, while Nos. 25, 26 and 27 have phenolic hydroxyl groups.

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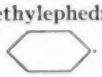
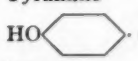
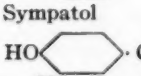
TABLE I.—COMPOUNDS EXAMINED.

Number.	Compound.	M. p., ° C. of hydrochloride.	Optical acctivity of hydrochloride.
1		216.5	Inactive
2		212.0	Racemic
3		89.0– 91.0	Racemic
4		215.0–220.0	Racemic
5	Nor-*d*-pseudoephedrine	178.0–179.0	$(a)^{15}_{5461}$ +46.2°
6	*l*-Ephedrine	214.0–216.0	$(a)^{25}_{D}$ −35.0°
7	*d*-Ephedrine	213.0	$(a)^{26}_{D}$ +36.0°
8	*dl*-Ephedrine	187.0	$(a)^{21}_{D}$ 0.0°
9	*l*-Pseudoephedrine	178.0–179.0	$(a)^{26}_{D}$ −62.5°
10	*d*-Pseudoephedrine	180.5	$(a)^{26}_{D}$ +62.5°
11	*dl*-Pseudoephedrine	163.0	$(a)^{26}_{D}$ 0.0°
12	*l*-Methylephedrine	188.0–189.0	$(a)_{D}$ −29.8°
13		191.0	Racemic
14		166.0	Racemic
15		180.0	Racemic
16		218.0	Racemic
17		193.0	Racemic
18		220.0–221.0	Racemic
19		219.0	Racemic
20		184.0	Racemic
21		225.0–227.0	Racemic
22		201.0–202.0	Racemic
23		105.0–112.0	Racemic
24		224.0	Racemic
25	Tyramine	268.5	Inactive
26	 Sympatol	148.0	Racemic
27	 Epinephrine	.....	Laevorotatory

In performing the test, one adds, in order, to 1 cc. of the solution to be tested, 0.1 cc. of 10 per cent copper sulphate and 1 cc. of 20 per cent sodium hydroxide. The development of a *purplish* or *deep blue* color constitutes a positive test. If it is positive, 2 cc. of ether, U. S. P., are added and the mixture shaken, to see whether or not the copper complex is soluble in this solvent. All these substances were examined in M/20 solutions as hydrochlorides except that epinephrine was used in 0.1 per cent solution, and the compound No. 23 was made to a M/40 solution on account of its difficult solubility. A M/20 solution of ephedrine is practically 1 per cent.

TABLE II.—$CuSO_4$-NaOH TEST OF EPHEDRINE ISOMERS.

Isomer.	Result of test.	Precipitate formed.	Solubility of the Cu-complex in ether.	Remarks.
l-Ephedrine	+	−	+	
d-Ephedrine	+	−	+	
dl-Ephedrine	+	−	+	Color of ether layer lighter than that with *l*- or *d*-ephedrine
l-Pseudoephedrine	+	+	+	
d-Pseudoephedrine	+	+	+	
dl-Pseudoephedrine	+	+	−	
l-Ephedrine plus *l*-Pseudoephedrine	+	−	+	
d-Ephedrine plus *d*-Pseudoephedrine	+	−	+	
l-Ephedrine plus *d*-Pseudoephedrine	+	+	±	The Cu-complex is very slightly soluble in ether.
d-Ephedrine plus *l*-Pseudoephedrine	+	+	±	The Cu-complex is very slightly soluble in ether.

The results with the optical isomers of ephedrine are assembled in Table II. It will be seen that all six isomers give a positive test. The Cu-complexes formed by *l*-, *d*- and *dl*-ephedrines are soluble, while those formed by *l*-, *d*- and *dl*-pseudoephedrines are insoluble, in alkaline solution. When shaken with ether, all these complexes, except that formed by *dl*-pseudoephedrine, go into the ether layer. The color of the ether solution with *dl*-ephedrine was found to be lighter than that with either *l*- or *d*-ephedrine alone. This observation was confirmed by repeating the test with 0.5 cc. of *l*-ephedrine plus 0.5 cc. of *d*-ephedrine, or by mixing equal quantities of the ether solutions from *l*- and *d*-ephedrines. When a mixture of equal quantities of *l*- and *d*-pseudoephedrines was tested with $CuSO_4$-NaOH, the Cu-complex formed was found to be insoluble in water and in ether, exactly the same as with *dl*-pseudoephedrine alone. When equal quantities of the ether solutions from *l*- and *d*-pseudoephedrines were mixed, violet crystals separated out on standing for a few minutes, leaving the ether colorless. Under the microscope, these crystals (Fig. 1) were observed to be clusters of rods, which were easily disintegrated. The color intensities of the ether solutions from the optical antipodes, that is, *l*- *vs.* *d*-ephedrine, and *l*- *vs.* *d*-pseudoephedrine, are the same. If the $CuSO_4$-NaOH test is made with 0.5 cc. of *l*-ephedrine plus an equal quantity of *l*-pseudoephedrine, the resulting Cu-complex is soluble both in water and ether. The same holds true with *d*-ephedrine plus *d*-pseudoephedrine. If the test is made

with optical isomers of the opposite sign from the two series, that is, *l*-ephedrine plus *d*-pseudoephedrine, and *d*-ephedrine plus *l*-pseudoephedrine, the resulting Cu-complexes are insoluble in water and very slightly soluble in ether. Here partial racemization probably plays an important part.

From the above findings, one can distinguish by means of the $CuSO_4$-NaOH test the three ephedrines from the three pseudoephedrines, and also the optical isomers of ephedrine and pseudoephedrine, respectively, from their corresponding racemic isomers. The exact nature of this reaction is not known. It is conceivable, however, that all the Cu-complexes of the isomers of ephedrine and pseudoephedrine have the same molecular formula, but due to the differences in their spatial arrangements they have different physical properties. The configuration of the ephedrine molecule has not been completely solved. According to

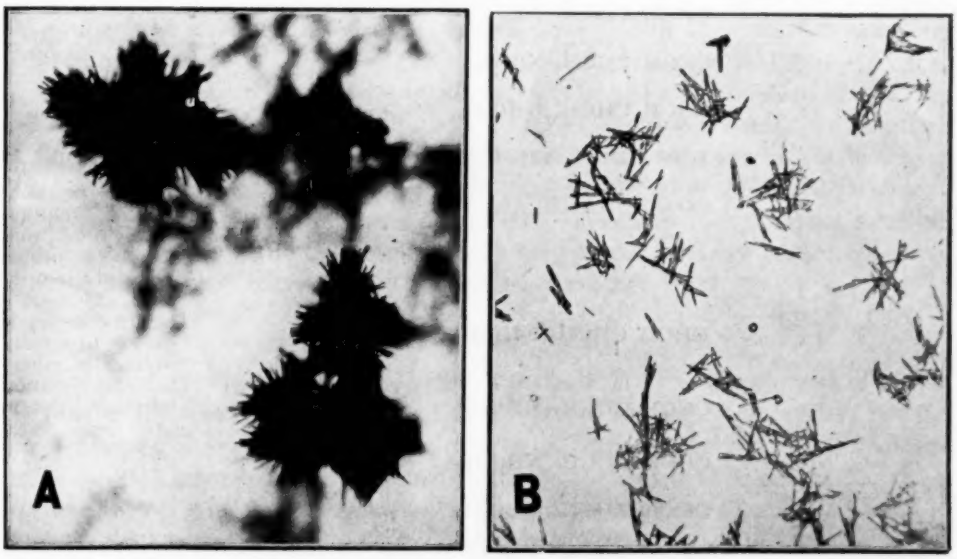


Fig. 1.—Violet crystals of copper complex formed by *dl*-pseudoephedrine, × 130; A, showing clusters, and B, individual crystals. (The author is indepted to Doctor G. L. Streeter, Department of Embryology, Carnegie Institute, for the photograph of these crystals.)

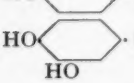
Emde's latest work (13), the -OH and $-NHCH_3$ groups are far apart in the ephedrine molecule, but near to each other in the pseudoephedrine molecule. More study is needed to furnish a thorough understanding of the reaction.

It should be pointed out that in order to bring about the differentiation as described, all the isomers must be tested in 1 per cent solutions, as different results may be obtained with different concentrations. *l*-Ephedrine, for example, yields a precipitate when tested in solutions of 2.5 per cent or more. It may be mentioned here, too, that the discoloration of ether, if present, by these Cu-complexes undergoes alteration upon standing for several days. The Cu-complex of *l*-ephedrine is also soluble in chloroform, petroleum ether, ethyl acetate, benzene and xylene.

Of the related compounds of ephedrine, the results are shown in Table III. One is at once struck by the fact that all those amines that give positive readings have

an OH group which is attached to the β-C-atom from the amine N. No. 23 forms a precipitate with $CuSO_4$-NaOH, but does not yield a color that is distinctly deep blue or purplish. Epinephrine, No. 27, gives a negative result. Its

TABLE III.—$CuSO_4$-NaOH TEST OF THE RELATED COMPOUNDS OF EPHEDRINE.

No.	Compound.	Result of test.	Precipitate formed.	Solubility of the Cu-complex in ether.	Remarks.
1		−	−	−	
2		+	+	−	
3		+	−	−	
4		+	+	−	
5		+	+	−	
12		+	+	+	
13		+	+	−	
14		+	−	−	
15		±	+	−	The color in aqueous solution changes from blue to purple (due to the presence of Cu_2O)
16		+	+	+	The Cu-complex is only partially soluble in ether
17		+	+	+	The discoloration of ether fades on standing
18		+	+		
19		+	+	+	
20		+	+	+	The discoloration of ether fades rapidly
21		+	+	−	
22		+	+	+	
23		±	+	−	
24		+	+	+	
25		−	+	−	The color in aqueous solution is light blue
26		+	−	−	
27		−	+	−	Cuprous oxide is at once formed

rapid reducing action may overshadow any other reaction that may be present. β-Phenyl-ethylamine, No. 1, produces the same color as the control test made with distilled water, showing that there is no formation of a Cu-complex. Ty-

ramine, No. 25, another amine having no OH group in the side chain, forms a precipitate, but yields a light blue color which is considered a negative result. The keto-amine, No. 15, gives a blue color but this cannot be definitely pronounced a positive test. Reduction of cupric hydroxide to cuprous oxide soon sets in. The exact manner in which copper combines with these amines deserves a more careful investigation. It suffices to point out from the above data, that the presence of an OH group in the side chain in addition to the amine N seems essential for the development of a deep blue or purplish color. A tertiary amine may also give a positive reading (No. 12). It is not certain that this OH group must be on the β-C-atom. In the present series only those compounds with an OH group on the β-C-atom were investigated. It remains to be seen whether or not similar amines with an OH group on the α-C-atom may give the same reaction. Its absence from the side chain (Nos. 1 and 25) negates the result. The presence of a second OH group either as an alcohol (No. 14) or as a phenol (No. 26) does not interfere with the reaction.

The colors formed by these substances vary from light purple to deep blue. The colors developed by Nos. 3, 18 and 26, and *l*-ephedrine resemble one another in aqueous solutions, those from No. 3 and *l*-ephedrine being more on the lavender side, while those from Nos. 18 and 26 are more on the blue side. All the colors undergo alteration on standing from day to day. There is no correlation between the chemical structure and the formation of a precipitate, nor between the chemical structure and the solubility of the Cu-complexes in ether.

SUMMARY.

The $CuSO_4$-NaOH test was applied to a series of 27 aromatic amines, of which 6 were optical isomers of ephedrine. Twenty-two of them showed positive results (development of a purplish or deep blue color). All those that give positive readings contain an OH group which is attached to the β-C-atom from the amine N. The Cu-complexes formed by 16 amines are insoluble in alkaline solution. Thirteen amines yield Cu-complexes that are soluble in ether. The same test can serve as a means to distinguish the three ephedrines from the three pseudoephedrines, and also the optical isomers of ephedrine and pseudoephedrine from the racemic isomers.

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THE NORWEGIAN COD LIVER OIL INDUSTRY.*

BY JOSEPH W. ENGLAND, PH.M.

Bergen "is the most picturesque city of Norway, built on the shores of the Pudde Fjord at the foot of seven rocky hills. Along the water front is a row of quaint old buildings from Hausa times, picturesque buildings facing the sea and behind these the more modern houses rise in pretty regularity far up the hillsides. Bergen was founded in 1070 under the name of Bjorgvin (meaning 'pasture on the hills'), and has over 100,000 inhabitants. Its main income is derived from the fisheries, and until recently the fishermen from all over northern Norway brought their catch to Bergen. In 1445 the Hanseatic League of German merchants established themselves there and monopolized the trade. This lasted for a hundred years, when the natives regained the 'German Section' of the town after a regular battle. In the Seventeenth Century, the trade of Bergen exceeded that of Copenhagen, and about 1800 Bergen was more populous than Oslo." (Clark.) Its museums, quays, fish markets and many buildings are of much interest while its suburbs consist of many small farms built along the slopes of the mountain side and given over to intensive farming. It is very rainy. So frequent are the rains—we heard a wit say—"it rains in Bergen 395 days in a year"—that the growth of vegetation is exceedingly rapid. The hay, for example, is laid upright on hay racks—made of posts and strung with wire. The Funicular Railway up to Floein runs 1000 feet up the mountain side at an angle of 15° to 26° on cable trains, giving a view of the country-side and valleys for miles around and out to the sea that beggars description. The roadways around and the suburbs are most beautiful, also.

Bergen is a city of particular interest to pharmacists the world over, because here centers the Norwegian Cod Liver Oil Industry. The early catch of fish this year (1928) was poor, but later improved somewhat; the yield will be only 50,000 hectoliters in 1928, as against 70,000 last year. The price of the oil now is about $40 a barrel. There has been no material increase in price because of the slow demand this year from the United States which is a large buyer. Possibly, the price may advance later, but increasing competition by Newfoundland oil may check this.

In a statement published by the Norwegian Cod Liver Oil Industry under the

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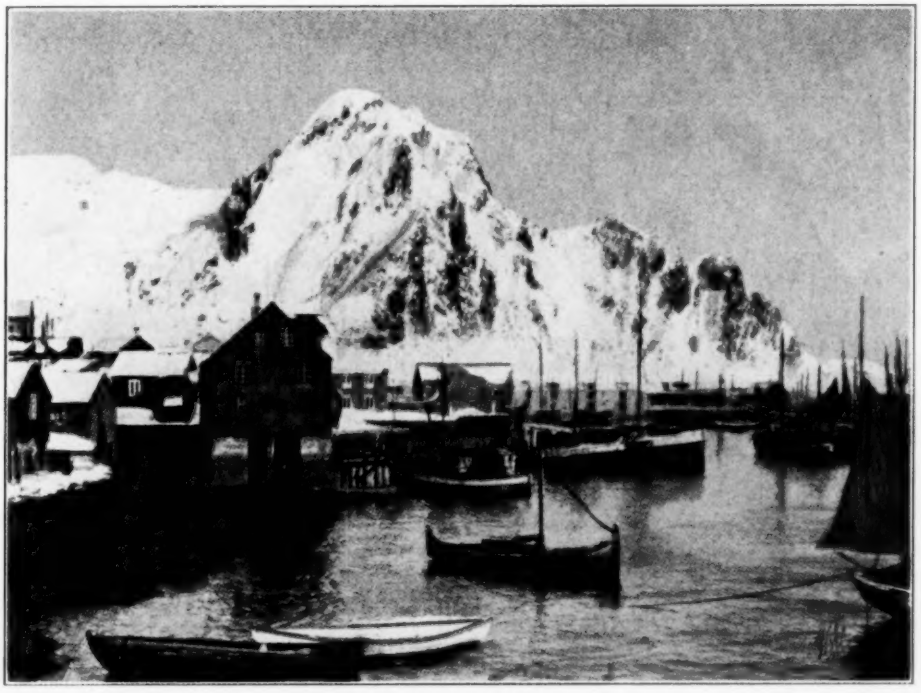
* Read before Philadelphia Branch, AMERICAN PHARMACEUTICAL ASSOCIATION, January 8, 1929.

title "One Hundred Million Cod" (*Oil, Paint and Drug Reporter*, November 12, 1928, 62), it is pointed out:

"In the winter and spring of each year, huge shoals of cod make for the coasts of Norway. They are looking for a spawning place in the comparatively shallow waters close to land—not more than 25 to 50 fathoms deep—where they also find their food. This regular annual migration means an extremely active fishing season for Norway, during which anything between 60 and 100 million pieces of cod may be caught. Fishing takes place so close to land that the livers to be used for the manufacture of cod liver oil, reach the refineries on the same day as the fish are caught, and hence they are as fresh as they possibly can be."

The oil is obtained from the fresh livers of the cod (*Gadus Morrhua* Linné and of other species of Gadus) by means of steam at a temperature which may reach



A Norwegian Fishing Station. From Annual Report for 1925 of Director of Fisheries of Norway.

98° C., but is usually lower. It is then cooled to a temperature of about 1° C. and the liquid portion, producing the "non-freezing" oil of commerce, is expressed through canvas and filtered. Inferior grades are prepared by heating. Drummond claims that the Newfoundland oil is equal to the Norwegian oil in content of vitamines, but Poulsson claims that the Norwegian oil is better in odor and taste than the Newfoundland oil because the larger part of it is obtained during the months of January to March with an average temperature of 3° C. or less, while the chief season in Newfoundland is during the summer months with an average temperature in August of 15° C. He states, also, that: "As autolysis and decomposition commence quickly in the liver, even in the course of a few hours, a low

temperature is an advantage, although only as regards taste and smell, since the content of vitamines is scarcely affected thereby."

It is pleasing to note that greater and greater care is being taken by the Norwegian Cod Liver Oil Industry (1), to obtain the oil from the cod liver at as low a temperature as possible to prevent putrefactive change; (2), to remove the stearin from the oil by freezing, since stearin is much more difficult to digest than the other glycerides of the oil; (3), to determine the vitamine-potency of the oil, both for vitamine A and for vitamine D; and (4), some dealers now market the oil in tin-lined barrels the air-space of which over the oil is filled with carbonic acid and nitrogen gases to eliminate the possibility of oxidation. To do this one dealer uses a special spigot or closure, whereby the air above the oil in the barrel

Large Specimens of Cod—from Annual Report for 1925 of Director of Fisheries, Norway.

is completely displaced with a mixture of carbonic acid and nitrogen gases, and the barrel is then hermetically sealed; and other dealers are following his example.

The U. S. P. X requires no vitamine standard for the official cod liver oil. It states that "Cod Liver Oil *may* be assayed for its vitamine A potency, and should *then* contain at least 50 units per Gm." (which is an extremely low standard). Cod liver oil so assayed must be labelled "This unit is not a measure of the antirachitic activity of cod liver oil." *In other words, the assay is purely optional and not obligatory.*

The U. S. P. X gives an assay process for determining only the vitamine A potency, but none for vitamine D, it being assumed that the content of each vitamine runs parallel, but the results of the experiments of Joan L. Clare and Kath-

erine M. Soames (*Lancet*, 1928, 214, 150) "leave no doubt that the content of vitamine A in cod liver oil bears no necessary relationship to that of vitamine D." Dr. Edward Poulsson, Professor of Pharmacology of the University of Oslo, is now using an assay method for vitamine D that is giving concordant and satisfactory results, and it is obvious that the time has come when the U. S. P. X should make *obligatory* assay processes for *both* vitamine A and vitamine D. It is just as important that cod liver oil be tested for its antirachitic potency as for its growth-promoting potency.

Professor Poulsson uses rats in testing for vitamine D; he notes the degree of rickets at the beginning of the test period; gives as diet Steenbock and Black 2965 slightly modified, and then 2, 3 or 4 mg. of cod liver oil daily. The test period is for 6 days, X-ray photographs being made immediately before and after the test period, and the degree of healing at the beginning and the end of the test period noted. Then the gain in weight during the test period is determined and the content of vitamine D units per Gm. during the test period found.

The Norwegian oil runs from 450 to 500 vitamine A units per Gm. (U. S. P. X Method), and from 200 to 250 or more vitamine D units per Gm. (Poulsson Method).

So important does the Norwegian government regard the determination of the vitamine potency of Norwegian cod liver oil that it has recently established by order of the King, the "Statens Vitamininstitut, Skoyen, Oslo" (The Norwegian Vitamin Institute).

In a personal letter to the writer, Professor Poulsson states (October 27, 1928):

> When some years ago it became known that the medicinal value of cod liver oil was due to vitamins, I pointed out to men engaged in the industry that it would be a rational development if it could be guaranteed that cod liver oil contained a satisfactory amount of vitamins, *i. e.*, that the same principle should be laid down for cod liver oil as for other medicinal preparations and products (*e. g.*, determination of the alkaloidal content of opium and other vegetable drugs, the biologic assay of digitalis, thyroid preparations, etc.). For some years cod liver oil tests were carried out at the Pharmacological Institute of the University of Oslo, but since July of this year this work has been transferred to the newly established State Vitamin Institute, which is under my direction. Vitamin tests are not compulsory, but I presume that all exporters of importance make use of the facilities for them.
>
> Vitamin A tests are carried out according to well-known and generally used methods, and the units are calculated according to the principles of the U. S. Pharmacopœia. As you are aware, the biological titration of this vitamin is difficult, as young rats of the same test batch frequently react differently. One must therefore allow for a fairly wide margin of error. In order that the results may be as complete as possible I indicate in my report to the exporters not only the amount of vitamin units, but also the growth of each animal during the test period, so that the buyer, if he so desires, may submit the results to experts. Each sample is marked in exactly the same way as that used by the exporters in question, the idea being that the results of the tests cover only the quantity of oil represented by the sample.
>
> Most Norwegian cod liver oils comply with the requirements of the U. S. P. X for growth on a dose of 2 milligrammes per diem.
>
> I have spent a lot of time upon a quantitative determination of Vitamin D. The results are published in the paper which I have now much pleasure in sending you—*The Biochemical Journal*, Vol. XXII, No. 1, 1928.

Another interesting fact is this: It has been found in cases of pregnant women who have recurrent abortions before term naturally and are unable to give birth to living children, that if they are fed cod liver oil during pregnancy they are able

to have normal childbirth. Dr. Poulsson reports the case of one patient with four recurrent miscarriages. Obviously, the cod liver oil acts in such cases through its growth-promoting vitamine A, and possibly, also, its antirachitic vitamine D. The number of such cases reported is, so far, relatively few, but the results suggest that possibly cod liver oil may be added with advantage to the diet of pregnant women generally.

I am indebted for much of the above data to Mr. E. Rasmussen, President of the Johan C. Martens Company, of Bergen, Norway, and to Professor Edward Poulsson, of the University of Oslo.

There is a possibility, strange as it may seem, that cod liver oil may have a new therapeutic rival, the use of which may affect the whole cod liver oil industry.

During the past five years, considerable research work has been done on the subject of irradiating various foods, such as oils, milk and cereals, by subjecting these to ultraviolet radiations with the mercury vapor lamp, which endow them with specific antirachitic properties. The substance which undergoes this change is a sterol-ergosterol, a sterol closely allied to cholesterol, a constituent of every cell in the animal body, and extractable from fungi, yeast and mushrooms, especially from ergot (the fungus of rye plants). It is, apparently, the precursor or specific parent substance of vitamine D.

In the opinion of Alfred F. Hess and J. M. Lewis (*Jour. A. M. A.*, September 15, 1928) activated ergosterol is by far the most potent of antirachitic substances. It is 100,000 times as active as cod liver oil. Notwithstanding this high degree of potency, it is probable that not more than 1 or 2 per cent of the ergosterol is rendered active by irradiation. For administration the activated ergosterol is given dissolved in cotton seed (or olive) oil, frequently 1 per cent or less. The usual daily dose is the equivalent of from 2.5 to 5 mg. (= $^1/_{26}$ to $^1/_{13}$ grain).

Irradiated ergosterol, Hess and Lewis state, is an absolute specific. Cod liver oil in the amount in which it can be given, these authorities claim, is a specific of limited dependability, only moderately effective for the average infant, uncertain in action for the rapidly growing infant and ineffective for the premature. Irradiated ergosterol is quite as valuable in tetany as in rickets, and in both disorders it is remarkable for the rapidity as well as the reliability of the action. In estimating the activity of antirachitic agents we are exceptionally fortunate in being able to make use of chemical criteria—the percentage of calcium and inorganic phosphorus in the blood; in investigations of the other vitamines, only general biologic criteria are available. Although not yet available commercially, irradiated ergosterol, under various trade names, has been tested in many clinics both in this country and abroad. It is difficult to appraise the strength of the irradiated ergosterol contained in these preparations, owing to the fact that ergosterol itself is by no means a uniform product. As yet, however, we have not sufficient clinical experience to define its proper dosage. *The distinction between the action of the physiologic and the toxic dose is one which must be emphasized.* Furthermore, the various preparations cannot be evaluated, as they have not yet been assayed on the basis of the number of "curative units (rat)" which they contain. The amounts now recommended and employed are unnecessarily high, as shown by the fact that they induce an excess of calcium and inorganic phosphorus, or of both, in the blood in the normal as well as in the rachitic infant—hypermineralization. Too great

emphasis has been laid on the rapidity of action. There is a peculiar tendency for irradiated ergosterol to continue to exert its effect for a considerable period after it has been discontinued, so that possibly it may be of advantage to give it interruptedly or perhaps only a few times a week. The difficulty in setting the therapeutic dosage for activated ergosterol is merely one which is associated with any new preparation.

Irradiated drugs and foods, Hess and Lewis affirm, constitute the newest chapter in therapeutics and pharmacology and without doubt will be the object of thorough investigation and study in the near future. Therefore, it would seem advisable, before distributing unreservedly to the medical profession this potency concentrate, *to make a more thorough clinical study of its dosage*, as has been done in regard to other potent extracts. In view of its reliability, its high degree of activity and its ease of administrations, irradiated ergosterol should prove a most valuable addition to our rapidly increasing fund of specific antirachitic agents.

The other side of the picture in the possible substitution of irradiated ergosterol for cod liver oil is this:

1. The total activity of cod liver oil does not reside in its vitamine D, nor in both its vitamine A and D, any more than quinine represents the total activity of cinchona bark, or morphine of opium or emetine of ipecac.

2. Cod liver oil is a fatty food of peculiar composition and peculiar properties. "*It enters into permanent combination with a body cell*, yielding energy to it and altering the whole of the cell's relation by becoming an integral part of the cell protoplasm. It is more readily absorbed than other fats and has probably a marked action on metabolism. The greater part of the fat obtained from animal tissues (as is cod liver oil), is not real fat, but to a great extent complex combinations of fatty acids with glycerophosphoric acid and nitrogen-containing compounds—the so-called phosphatides—this is the portion actually made use of by living cells." ("Martindale and Westcott's Extra Pharmacopœia," 1924, 616.)

3. Furthermore, "in tuberculosis, the value of cod liver oil, according to the theory of the late O. T. Williams and others, depends on the fact that the liver has the power of decomposing fats and yielding to the blood *unsaturated fatty acids*.[1] These have chemically a loose double linkage, and are capable of exerting chemical action more markedly. Fish, particularly cod liver, and vegetable oils, are richer in these constituents than animal oils. The effects of cod liver oil on the acid fat properties of the tubercle bacillus showed that the oil had attacked the waxy coating of the bacillus, and rendered it, after several months, non-stainable by the usual methods." ("Martindale and Westcott's Extra Pharmacopœia," 1928, 616.)

In addition, "crude cod liver oil extracted with as little heat as possible, and not refined, has a definite inhibitory and bactericidal action on virulent tubercle bacilli. The action was more potent than that given with the refined oil of commerce. Cotton seed oil was used as the control." (H. B. Campbell and J. Kieffer, *Pharm. Jour.*, 1.23, 573, vide Martindale and Westcott's Extra Pharmacopœia (1924), 616.)

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[1] The *Saturated Fatty Acids* are those in which all the valencies of the Carbon atom are fully satisfied, as, for example, in Acetic Acid—the first of the series containing Palmitic and Stearic Acids. The *Unsaturated Acids* have some of the Carbon Valencies unattached to other elements and hence have double bonds, thus C=C, *e. g.*, Acrylic Acid—the first of the series containing Oleic Acid. (M. and W.)

Whether or not irradiated ergosterol is the therapeutic equivalent of cod liver oil *in all respects* can only be told by an extended series of comparative clinical tests with both substances, and this will take a long time. So there need be no fear of immediate danger to the cod liver oil industry.

THE ESTIMATION OF FAT IN MALTED MILK POWDERS.*

BY C. W. BALLARD.

My experience with the microscopical examination of malted milk powders over a period of years and with several hundred samples has shown that this is a rapid method of ascertaining conformity, in process of manufacture, to the official definition.[1] This definition provides that malted milk shall be the product made by combining whole milk with the liquid separated from a mash of ground barley, malt and wheat flour, with or without the addition of sodium chloride, sodium bicarbonate and potassium bicarbonate, in such a manner as to secure the full enzymic action of the malt extract, and by removing water. The resulting product contains not less than 7.5 per cent of butterfat and not more than 3.5 per cent of moisture. Only one exception to the data included in a previous paper upon this subject[2] has come to the attention of the writer. This exception was a sample of malted milk powder which was almost entirely soluble. It is likely that this preparation is manufactured in accordance with the official specifications but apparently the liquid separated from the mash of barley malt and wheat flour has been clarified or filtered to such an extent as to be free from the bulk of tissue fragments ordinarily ocurring in a malted milk. The market is still flooded with mixtures of skimmed milk powder, sugar and dry malt extract often masquerading under names approaching the term "malted milk" as closely as possible without incurring prosecution.

As specifications for butterfat and moisture are included in the official definition the question has arisen in legal proceedings as to how these mixtures compare with the genuine article especially as regards fat content. In many of these preparations the total fat content is materially increased through the addition of cocoa but in no instance did such samples approach the minimum specified for fat in the official definition. In order that the fat content of a given sample might be stated in connection with the microscopical findings, trials of several methods for the estimation of fat were made. The judicial mind may be slightly sceptical of microexaminations but can quickly appreciate results stated in figures.

As noted in Leach, "Food Inspection and Analysis," page 185, neither ether extraction nor the Babcock methods are satisfactory. The Werner-Schmidt method gave better results but the apparatus is inconvenient. The Roese-Gottlieb method recommended in "Methods of Analysis," Association of Official Agricultural Chemists, pages 262 and 275, with the slight modification described in this com-

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* Scientific Section, A. PH. A., Portland meeting, 1929.

[1] "Definitions and Standards for Food Products," F. & D. Circular No. 2, U. S. Department of Agriculture.

[2] "The Microanalysis of Malted Milk," C. W. Ballard, JOUR. A. PH. A. (April 1918), 326–333.

munication, gave uniform and satisfactory results. In abstract the method stated in this publication is as follows:

Into a 250-cc. beaker weigh 15 Gm. of sample, add warm water until the beaker and contents weigh 100 Gm., mix until homogenous and cool to room temperature. Stir the mixture thoroughly and weigh accurately 10 Gm. into a small beaker; then transfer to a Röhrig tube by means of 10 cc. of 95% alcohol. Add 25 cc. of ether, shake for 30 seconds, add 25 cc. petroleum ether and again shake for 30 seconds. Let stand until the upper liquid is practically clear. Draw off as much as possible of the ether-fat solution into a tared flask through a small filter. Extract a second time in similar manner using 15 cc. of each ether. A third extraction is usually necessary. Wash the tip of the outlet-tube and filter with a few cc. of the mixed ethers; evaporate the ethereal-fat solution slowly on a steam-bath; then dry the fat in a boiling water oven to constant weight. Confirmations of purity of fat and reagents may be made and corrections introduced if necessary.

Commenting upon this method we find that the dissolving of the sample in warm water is sometimes difficult in the case of genuine malted milks. There is always more or less insoluble material present in the form of tissue débris and starch. The weighing of a 10-Gm. aliquot portion necessitates a transfer of both dissolved material and sediment. Furthermore in the transfer of this aliquot portion to the extraction tube there is room for loss in that particles of sediment and portions of the liquid adhere to the cylinder or beaker used in weighing. If the accurately weighed sample could be directly introduced into the tube and dissolved therein, the operation would at once be simplified. As it is impossible with the average analytical balance to accurately weigh small quantities of sample in the usual Röhrig tube a modification of this apparatus is suggested for work upon malted milk powders.

The extractor used in this work was of larger size than the usual Röhrig tube and the lower 25 mm. of the apparatus was detachable and fitted to the remainder of the tube by an accurately ground joint. The detachable portion of the tube was used as a capsule or receptacle for weighing the sample. In this way an accurately weighed portion of sample could be directly introduced into the extraction apparatus and could be dissolved therein by the addition of warm water. The large size of this tube permits the addition of 10 cc. of water to dissolve the sample. The tube had a total length of 360 mm.; the lower constricted portion was 150 mm. long; the side outlet-tube was 130 mm. from the base; the capacity below the outlet-tube was 25 cc.; the total capacity was 125 cc.

The procedure is as follows—weigh 1 Gm. of sample in the tared detachable portion of the tube; fit this to the end of the apparatus; add 10 cc. of warm water and shake thoroughly to dissolve the sample. From this point the official method outlined above is followed.

The results of a series of fat estimations carried out in this apparatus and by this method may be tabulated as follows:

Type of Sample.	Estimations.	Fat content. High.	Low.	Average.
Genuine malted milk	14	8.94%	7.00%	7.86%
Chocolate malted milk	3	9.90%	8.67%	9.06%
Substitute malted milk	22	1.67%	0.44%	0.87%
Substitute malted milk with cocoa	12	5.86%	1.98%	3.25%

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THE COLLOIDAL NATURE OF IRON SCALE SALTS.

BY D. LOESER.

Iron has been used in medicine since time immemorial. Metallic iron, green copperas, iron rust, carbonate of iron, bole Armenian, etc., are all mentioned by the earliest writers on medicine and pharmacy; by Egyptians and Greeks, as well as by men of the middle ages. At the beginning of the nineteenth century a new type of pharmaceutical iron was introduced, namely, scaled salts of iron.

Thus the medicinal use of ferric phosphate was recommended by Kopp as early as 1801. In the same year Klaproth prepared and gave the formula for soluble iron acetate. By the middle of the century iron citrate, iron and ammonium citrate, iron and ammonium pyrophosphate, were all being used. (1) About this time reduced iron, and a little later "soluble saccharated iron oxide" came into favor.

Towards the ends of the century and the beginning of the twentieth century still another change occurred in iron therapy. For a time so-called organic preparations of iron were extensively used. Finally the development of intramuscular and intravenous therapy led to the use of a form of iron salt adapted to this new method of administration, *i. e.*, colloidal iron.

About 1914, the writer started a thorough investigation concerning the form of iron suitable for intravenous administration. It soon became evident that the injection of the typical inorganic salts, such as ferric chloride, was entirely unsatisfactory inasmuch as they caused clotting and irregular deaths. The clots in the circulation brought about vascular disturbances, proved a mechanical cause of death, and rendered it impossible to obtain a uniform lethal dose. This is readily understood when it is remembered that the blood and tissues are in reality colloidal systems and, as such, subject to precipitation by inorganic salts. Or, as is usually stated in medical literature the usual inorganic iron salts are astringent, styptic and hemostatic.

In the choice of an iron salt suitable for intravenous therapy the desirability of combining it with arsenic and other hematonics suggested iron cacodylate. The choice of this salt was particularly fortunate, for, by varying the amounts of peptizing ions left in solution, it was found possible to prepare a series of iron solutions ranging from the completely ionized to the completely colloidal form in which no dialyzable ferric ion could be detected. It soon became evident that for intravenous injections iron must be in a colloidal form.

This point is amply proven by the following toxicity studies made in 1924 in this laboratory. In the series of tests which comprise these studies the following solutions were employed: (1) solution of iron chloride, a definite crystalloid iron salt; (2) solution of colloidal iron freed from crystalloid iron by dialysis; (3) iron cacodylate, partially colloidal, due to the natural tendency of compounds of iron with weak acids to hydrolyze in solutions forming ferric hydroxide; (4) iron cacodylate in which all iron is in the colloidal state. The solutions employed were all diluted so that 5 cc. contained 0.0075 Gm. Fe (0.15% iron) and were prepared as follows:

Ferric Chloride—Diluted from the U. S. P. solution of iron chloride.

Colloidal Iron—Prepared according to method for dialyzed iron, U. S. D., page 1620. The

final solution yielded no non-colloidal iron after twenty-four hours' dialysis in a parchment thimble.

Iron Cacodylate (partially colloidal)—A simple solution of iron cacodylate. Dialyzing tests showed that a portion of the iron was in a colloidal form. However, on account of the tendency toward precipitation, it was not feasible to determine the actual percentage.

Iron Cacodylate (completely colloidal)—This solution contained all of its iron content in the colloidal form. None passed through the dialyzer after a twenty-four hour test.

In determining the toxicity of these various solutions our standard technic of intravenous injection into white rats was used as is fully described elsewhere. (2) The results are reported below in Tables I–IV and summarized in Table V. It will be seen that the maximum dose of iron in the case of $FeCl_3$ was 5.3 mg. whereas with the colloidal iron we were able to inject 41.1 mg. without death or noticeable immediate inconvenience. Thus ferric chloride was shown to be at least seven times more toxic than colloidal iron.

In the case of iron cacodylate (partially colloidal) 21.4 mg. were injected, while with the iron cacodylate (colloidal) we were able to inject 32.1 mg., showing that the colloidal form is at least 50 per cent less toxic than the partially colloidal. The increase in toxicity of the colloidal iron cacodylate over the colloidal iron is naturally due to the presence of the cacodylate ion.

These figures show conclusively that colloidal iron is much less toxic than non-colloidal; and indicate that the reactions obtained with iron intravenously are due to the fact that the iron employed was not entirely in the colloidal form.

TABLE I.—IRON CHLORIDE.

Dose. Mg. per kilo.	Result.
5.3	Survived
7.9	Died in 10 min.
10.6	Died on table
13.4	Died on table
16.0	Died on table
19.7	Died on table
21.4	Died on table

TABLE II.—COLLOIDAL IRON.

Dose. Mg. per kilo.	Result.
13.4	Survived
16.04	Survived
18.9	Survived
21.4	Survived
26.8	Survived
29.5	Survived
34.2	Survived
37.5	Survived
41.1	Survived
42.8	Very sick: hind legs paralyzed
44.4	Died in 10 hrs.
49.2	Died in 5 min.

TABLE III.—IRON CACODYLATE. (Partially colloidal.)

Dose. Mg. per kilo.	Result.
21.4	Survived
24.1	Died in 10 min.
24.1	Died in 70 min.
26.8	Died in 3 hrs.
29.5	Died in 24 hrs.
32.1	Died in 24 hrs.
32.1	Died in 24 hrs.

TABLE IV.—IRON CACODYLATE. (Colloidal.)

Dose. Mg. per kilo.	Result.
21.4	Survived
24.1	Survived
26.8	Survived
32.1	Survived
32.1	Survived
36.0	3 died; 1 survived
38.3	Died

TABLE V.—COMPARISON OF MAXIMUM DOSE INJECTED WITH SAFETY.

Salt.	Form.	Dose.
Ferric Chloride	Crystalloid	5.3
Iron Cacodylate	Partially colloidal	21.4
Iron Cacodylate	Entirely colloidal	32.1
Colloidal Iron	Entirely colloidal	41.1

The results of these experiments suggested that the efficiency of scale salts was due to the fact that they also were colloidal in nature. Scale salts were introduced as substitutes for such salts as ferrous sulphate or ferric chloride in an effort to overcome the styptic, astringent and caustic effects of the latter. Since these effects seemed due to the presence of ferric ion (we now know that the ferric ion precipitates the albumens either in the blood or in the mucosa) attempts were made to develop preparations in which the ferric ion was masked. This led to the production of "scale salts."

Scale salts are pharmaceutical preparations rather than definite chemical compounds. If their method of preparation be examined it is seen that they are all made directly or indirectly from ferric hydroxide. If ferric citrate is desired the precipitated ferric hydroxide is "dissolved" by citric acid; if ferric tartrate is desired, by tartaric acid, etc. The solution is concentrated to a thick syrup and then usually poured on smooth, thick sheets of glass. They are bright shining fragments, giving the impression of being crystals though they are not. The scale preparations listed in the U. S. P. VIII are ferric citrate, iron and ammonium citrate, iron and quinine citrate, iron and strychnine citrate, ferric phosphate, ferric pyrophosphate, iron and ammonium tartrate, iron and potassium tartrate. The only ones sanctioned at present are iron and ammonium citrate, and soluble ferric phosphate.

In all of these preparations the characteristic ferruginous taste is missing or present only to a very slight degree. The astringent effects are lacking. Teeth are not blackened because of the lack of ferric ion (as is well known, the blackening of teeth as the result of iron administration is due to the formation of ferric tannate). The toxic effects were greatly diminished.

The diminished ferric ion content of these compounds can be ascribed to one of two causes: either these scale salts are highly complex organic compounds which ionize to a very slight degree or they are colloidal in nature in which case the amount of ferric ion would be very slight. Judging from their method of preparation and from the fact that such chemical evidence as we have concerning their composition indicates no one definite compound, the latter explanation seems most reasonable. Indeed, the very fact that they will not crystallize would seem to indicate most strongly that they are colloidal in nature.

Accordingly a search of the literature was made to find evidence supporting or disproving the belief that scale salts are colloidal in nature. Redwood (3) seems to be the only one to have recognized the fact that we may be dealing with colloids.

Salt.	Days.	Amount of salt diffused in per cent.	Salt.	Days.	Amount of salt diffused in per cent.
Iron Citrate	15	66%	Ferrous Chloride	6	96%
Ammonium Citrate	6	50–75%	Ferric Chloride	6	96%
Tartrated Iron	4	40–60%	Ferric Hydroxide, no diffusion		
Ferrous Sulphate	8	96%	Ferric Hydroxide and Albumen, no diffusion,		
Ferric Sulphate	8	93%	*i. e.*, no iron in dialysate at end of 2 days.		

He concluded that, "The absence of inky taste and a strong styptic property may tend to induce a belief that the scaled preparations of iron are either colloidal, like dialyzed iron, or at least that they are deficient in diffusive power, for colloids

are usually marked by absence or deficiency of taste." The experimental evidence which Redwood offered in support of this is not very satisfactory inasmuch as details of the methods pursued are not given. He dialyzed the various scale salts, measuring the amount of salt diffusing, with the following results:

From these results it would seem that scale salts are intermediate between colloids and crystalloids. This is readily understandable when it is realized that through hydrolysis of these organic salts, ferric hydroxide, is formed. Hydrolyzed ferric hydroxide is colloidal in nature. In order to throw further light upon this subject, the following experiments were set up in this laboratory:

We prepared solutions containing approximately 0.16% of iron of the following salts: iron and ammonium citrate (soluble ferric citrate), iron citrate (ferric citrate scales), iron potassium tartrate (ferric brown scales), iron and ammonium tartrate–ferric, iron pyrophosphate soluble scales with sodium citrate, iron phosphate–ferric (soluble pearls with sodium citrate), iron glycerophosphate (ferric). A solution of the salt was boiled for fifteen minutes. In each case a change in color occurred, the final color being noted in Table VI.

Two of the simplest methods of testing the colloidality of an iron salt are by means of dialysis and by precipitation with electrolytes. Of the two, dialysis is the more reliable, inasmuch as the factors exerting a protective action against precipitation are still only incompletely known. In general, however, colloids of the type of colloidal ferric hydroxide are easily precipitated by electrolytes. The salt chosen was magnesium sulphate. The results of these precipitation tests are reported in Column 5 of Table VI. It will be seen that magnesium sulphate caused instant precipitation of the iron potassium tartrate, iron ammonium tartrate and the iron glycerophosphate.

The dialysis experiments were carried out as follows: 10 cc. of each solution was placed in a parchment dialyzing thimble and immersed in 200 cc. of water. Twenty-four hours later tests for iron were made in the dialysate (with ammonium sulphide). We found that the potassium tartrate, ammonium tartrate and the glycerophosphate gave practically no reaction for iron. The citrates, pyrophosphates and phosphate yielded considerable diffused iron. The magnesium sulphate tests were again applied to a portion of the solution in the thimble, with the same effect noted as in the original solution. The water was renewed every two days, six times in all. At the end of this period, we found that the solutions were all practically free outside of the thimble, while the solution inside the thimble was, in each instance, high in iron.

The results justify the conclusion that in the case of iron potassium tartrate, iron ammonium tartrate and iron glycerophosphate we are dealing with true colloids. These solutions were the darkest in color resembling the typical red-brown color or colloidal iron hydroxide. The fact that a high percentage of iron remains in all of the dialyzing thimbles, even after fourteen days, indicates that the others are also distinctly colloidal inasmuch as the magnesium sulphate does not precipitate iron and ammonium citrate, iron citrate, iron pyrophosphate, and iron phosphate, and that these latter all contain the citrate ion, it may be that the citrate ion exerts a protective effect.

In other words, under the conditions of these experiments, iron scale salts seem to act as true colloids, the degree of colloidality varying with the nature of the

salt. Since the solutions of the scale salts prepared for these experiments resemble those used therapeutically we may ascribe the lessened astringent action, etc., to the fact that these scale salts, as used therapeutically, are colloidal in nature.

SUMMARY AND CONCLUSION.

Evidence has been submitted proving that when a salt is injected intravenously, its toxicity decreases as the proportion of the salt in the colloidal state increases. This data led us to suspect that the therapeutic advantages of "scale salts" over the purely inorganic form of iron may also have been due to the fact that these salts were wholly or partly colloidal in nature. It is hoped that the evidence submitted proves that iron scale salts are partly colloidal in nature, as used therapeutically; the amount of iron entering into the colloidal state depending upon the nature of the salt itself, and upon its method of preparation.

TABLE VI.—COLLOIDAL PROPERTIES OF SOME IRON SCALE SALTS.

Salt.	Approx. formula.	Approx. iron conc.	Color.	$MgSO_4$ ppt.	$(NH_4)_2S_x$ to dialysate. 24 hrs.	2 wks.
Iron and ammonium citrate (soluble ferric citrate)	$Fe_2(NH_4)_2(C_6H_5O_7)_2$ plus $3H_2O$	16–18%	Amber	No ppt.	Fairly heavy ppt.	No ppt.
Iron citrate (ferric citrate)	$Fe_2(C_6H_5O_7)_2$ plus $6H_2O$	16%	Turbid amber	No ppt.	Fairly heavy ppt.	No ppt.
Iron potassium tartrate (ferric brown scales)	$Fe_2(C_4H_4O_6)_3$ plus $K_2C_4H_4O_6$	15%	Cherry red	Immediate ppt.	Green color	No ppt.
Iron and ammonium tartrate	$2(FeO)NH_4C_6H_4O_6$	13%	Cherry red	Immediate ppt.	Light ppt.	No ppt.
Iron pyrophosphate (soluble scales with sodium citrate)	$Fe_4(P_2O_7)_3$ plus $3Na_4P_2O_7$ plus $14H_2O$	10%	Yellow green	No ppt.	Fairly heavy ppt.	No ppt.
Iron phosphate ferric (soluble pearly with sodium citrate)	$Fe_2(PO_4)_2$ plus $(Na_3C_6H_5O_7)_x$	12%	Yellow green	No ppt.	Fairly heavy ppt.	No ppt
Iron glycerophosphate ferric	$Fe_2(C_3H_7O_6P)_3$	14–16%	Turbid red-brown	Immediate ppt.	No ppt.	No ppt.

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THE ASH CONTENT OF RESIN OF PODOPHYLLUM.*

BY L. D. HAVENHILL.

The purpose of this paper is to show the per cent of ash in various commercial samples of the official Resin of Podophyllum and to determine if the raising of the ash limit of the U. S. P. VIII of 0.7% to 1½% is justifiable. Granville and Sage (*Ph. J. & Tr.*, 1893 (Nov.), 421) examined eight samples of the Resin for ash and concluded that a sample which contained much above 0.50% of inorganic matter on incineration may be considered to be more or less adulterated.

As a general statement it is to be expected that an alcoholic extract will not run very high in mineral matter and that when such an extract is poured into acidulated water the mineral content of the precipitate will be materially decreased. Determinations made in my laboratory indicate that this is so, at least in the case of Resin of Podophyllum.

Fifteen commercial samples of Resin of Podophyllum were examined for mineral matter. Two of these (Nos. 5 and 6) were not claimed by the manufacturer to be U. S. P.

Eight samples gave mineral matter ranging from 0.18–0.45% and the remaining five from 0.65–0.89%. From the appearance of these latter I would be inclined to the opinion that they were not made by the U. S. P. process. The color of the resin will vary with the temperature, humidity and exposure to light. The color of samples Nos. 2, 4, 10, 12, 14, 16, 17 and 20 I would suggest as normal.

Several experiments were made to determine whether neutral water, hydrochloric acid water, or alum water was preferable as a precipitant. The yield of resin was found to be about the same for the hydrochloric acid water and the alum water (greater concentrations than 2% of alum water were not tried). The yield with neutral water was about 10% less than for hydrochloric acid water and the precipitate was more difficult to wash. From the experiments made, I am inclined to the belief that alum water as a precipitant offers nothing of advantage over hydrochloric acid water. Yellow resins should be looked upon as indicative of alum water precipitation.

It is interesting to note the different densities of these samples. Each vial contains exactly one Gm. of resin. No conclusion as to activity can be drawn from this but doubtless the dosage of Resin of Podophyllum by volume would be undesirable. Sample No. 16 is taken as unity and the density of the samples shown is thus found to range from 0.6–1.8.

Experiments made in the pharmaceutical laboratory of the School of Pharmacy at the University of Kansas indicate that an ash content below 0.25 can be maintained. It may be, however, that resin prepared in a commercial way may run somewhat higher in mineral content. As a result of this examination and of work done in the laboratory, I am of the opinion that the raising of the ash content to 1.5% was not justifiable. I therefore recommend that a maximum mineral content of 0.5% for Resin of Podophyllum be given careful consideration in the 11th Revision of the U. S. P.

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* Scientific Section, A. PH. A., Portland meeting, 1928.

TABLE I.—RESIN OF PODOPHYLLUM.

Serial number.	Ash percent.	Comparative density.	Comments.
1	0.40	0.925	Commercial Sample
2	0.40	0.616	Commercial Sample
3	0.62	1.140	Commercial Sample
4	0.24	0.600	Commercial Sample
5	29.04	1.50	Old style ppt. with alum, not U. S. P. Dose 1/2–2 gr.
6	0.62	1.85	Very old sample furnished by J. U. Lloyd
7	0.31	1.00	Commercial Sample
8	0.45	0.705	Commercial Sample
9	0.86	1.20	Commercial Sample
10	0.32	0.86	Commercial Sample
11	0.65	1.20	Commercial Sample
12	0.25	0.775	Commercial Sample
13	0.89	0.727	Commercial Sample
14	0.18	0.830	Commercial Sample
15	0.30	1.41	Commercial Sample
16	0.10	1.00	K. U. Pharm. Lab. Sample
17	0.12	0.829	K. U. Pharm. Lab. Sample
18	0.13	1.20	K. U. Pharm. Lab. Sample
19	0.15	1.60	K. U. Pharm. Lab. Sample
20	0.23	1.09	K. U. Pharm. Lab. Sample ppt. without acid
23	0.6	1.60	K. U. Pharm. Lab. Sample ppt. with 0.33% alum water
24	0.95	1.41	K. U. Pharm. Lab. Sample ppt. with 0.67% alum water
25	1.20	1.71	K. U. Pharm. Lab. Sample ppt. with 1% alum water
26	1.3	1.50	K. U. Pharm. Lab. Sample ppt. with 2% alum water

SUPREME COURT TO FIX EXTENT OF TRADE NAME PROTECTION.

Briefs have been filed in the Supreme Court of the United States on the question whether the issuance of the trade mark by the Patent Office under the Act of 1905 extends the rights of the holder into states in which he has not done business. It seems that the trade mark "Home Brand" owned by the respondent had been used in a number of states, and in 1905 the respondent registered its trade mark in the United States Office under the Trade Mark Act of 1905.

The petitioner had used the word "home" in combination with other terms and under that designation sold products in quite a number of states.

The Supreme Court of Ohio in rendering a decision said that "the Trade Mark Act of 1905 protected the trade mark rights of the registrant and owner thereof in all the states, even in advance of the question of trade therein and to afford full protection to such registrant and owner."

The petitioner's brief contends that the property and trade marks and the right to their exclusive use rests on the laws of the states, and resting on the laws of the states are limited to the states in which the trade mark is used.

ILLEGIBLE PRESCRIPTIONS.

Scribo—in *Chemist and Druggist* for January 1929, 26, 111—refers to the writing of a prescription and relates—"he had read a pronouncement by a medical man that the inclusion of badly written prescriptions in the examinations of the Pharmaceutical Society was a slur on the profession; it would be of some interest to have a doctor's reading of this one. The worst writer I ever came across personally was a physician who at one time was fairly well known, and on one occasion I was deputed by my employer to interview the writer. On presenting the document to him and asking if he would oblige by telling us what was intended, he gazed at it for some moments, and then said, 'What is the patient's name?' Fortunately he was possessed of a sense of humor; so that when I retaliated by saying, 'Which is the patient's name?' he burst out laughing, and on my telling him the name of the customer decided to write out a new prescription."

The Editor recalls an incident relating to a prominent physician and a pharmacist of nearly a half century ago which resulted in the pharmacist returning the prescription to the physician asking him to fill it.

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All articles in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, University of Maryland, School of Pharmacy, N. E. Cor. Lombard and Greene Sts., Baltimore, Md.

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MEETING COMPETITION.

Some British pharmacists encourage the sale of household items, as is indicated by the following communication from Herbert E. Kendrick, recently published in the *Chemist and Druggist*. Many of the suggestions are timely and may be suggestive to our members.

"March brings with it the spring cleaning, and chemists who make a special display of household cleaning articles will find profitable business result. There is little doubt that many lines which could be purchased from the chemist are obtained elsewhere, merely because the chemist does not realize the need for continually reminding the public of the fact that these goods can be obtained at his pharmacy. This applies particularly to a number of household preparations, originated by chemists, that have drifted more or less into the hands of other traders—floor polishes, furniture creams, disinfectants, hat and fabric dyes, plate powders, cleansing ammonia, benzene, beeswax, to mention a few.

"Some chemists will object to selling the above, I know, but who is better able to give useful help and advice in the selection and use of such goods than the chemist? Women, who are the chemists' best customers and the principal buyers, will greatly appreciate the pharmacy where helpful information on such matters may be readily obtained. Naturally, the high-class dispensing establishment will not handle such lines; but there must be many suburban and country chemists who do, or could, develop considerable business in these commodities. Water-glass will soon be asked for. The varying specific gravities of this product, according to quality, and the consequent unsatisfactory results in use, can be made a selling point for chemists' quality. A little advice on the best way to prepare the solution and how to guess the quantities of water (not many households have the convenience for measuring gallons) will help in cementing good-will. Next will come the demand for naphthalene balls, camphor, cedar dust, insect powder and other moth preventives. Suitable suggestions for the use of these may be prepared in advance.

"The sale of weed-killers and other horticultural sundries has been almost filched from pharmacy by the florists and seedsmen. Much business can still be done, however, even in towns, by the chemist who takes the trouble to know something about them and to let customers know that he stocks such preparations. One of my apprenticeship jobs some twenty-five years ago was to make furniture cream and bottle it in stone bottles. (I also have a vivid recollection of attempting to fill a leaky bottle with black straw hat dye.) Even to-day I would take more pride in selling a bottle of furniture cream or hat dye of my own manufacture than in handing over the counter a packet of something advertised in the papers as to be obtained from all reputable chemists, grocers, hairdressers and stores. Photographic chemists will, of course, be cleaning up the dark room and laying in stock ready for Easter.

A PRELIMINARY REPORT ON THE COMPOSITION OF SYRUP OF CALCIUM IODIDE N. F. V.*

BY CATY J. BRAFORD AND H. A. LANGENHAN.

Many methods have been offered for the preparation of Calcium Iodide. Gay-Lussac (1) first prepared it, by evaporating a solution of calcium oxide in hydriodic acid, with the exclusion of air. Caillot (2) first formed an iodide of iron and then allowed it to react with slaked lime. Mayer's (3) formula substituted "precipitated carbonate of lime" for the slaked lime. Pidduck (4) did not outline his method but stated that his preparation consisted of iodine and lime in the proportions of one part of iodine to seven parts of lime, "probably in a similar state of combination to that of chlorine and lime in the so-called chloride of lime." When the product was first dissolved in water, he believed it to exist in the form of iodide and iodate of lime.

$$6\ CaO + 6\ I \longrightarrow 5\ CaI_2 + CaO,\ IO_5$$

The common methods offered by the various texts for preparing calcium iodide are by neutralizing hydriodic acid with calcium carbonate, lime or calcium hydroxide; (5, 6, 7, 8, 9, 10) or the formation of ferrous iodide and the subsequent reaction between it and calcium carbonate or calcium hydrioxide (2, 11, 12, 13, 14, 5).

Other methods have been reported that are interesting from the pharmaceutical viewpoint though not so practical. Moison (15) lead a stream of hydriodic acid into fragments of marble for twenty-four hours, then filtered. Lies-Bodart and M. Jobin (16) used a combination of iodine, water and calcium sulphide. Meniere (17) recommended that it be prepared from the "sulphuret of calcium," so as to remove any other metallic oxides. Wendler (18) and Wagner used iodine and calcium sulphite. The reaction was analogous to the one for barium iodide, which they gave as follows.

$$BaSO_3 + Ba(OH)_2 + I_2 \longrightarrow BaI_2 + BaSO_4 + H_2O$$

Morley (19) and Muir added iodine to a mixture of phosphorus and water and after neutralizing the mixture with calcium hydroxide, evaporated it in a carbon dioxide-free atmosphere. von Liebig (20) used iodine, phosphorus and milk of lime. Berthemot (21) obtained calcium iodide by the double decomposition of lead iodide and calcium carbonate. Molten calcium has been directly combined with iodine vapors (22). Brink (23) and Baxter dissolved marble in nitric acid and then heated the solution with lime to precipitate any iron and manganese compounds. To obtain pure calcium carbonate, ammonium carbonate was added and the resulting precipitate was dissolved in hydriodic acid.

Rother (12) experimented with several methods. In one caustic lime was triturated with iodine to form a "peculiar black combination" which was decomposed by water. When this mixture was boiled, a colorless solution of calcium iodide and calcium iodate were obtained and the excess lime remained in the form of the hydrate. He found no convenient method for separating the salts, and did not consider the reduction of the iodate to be practicable. The second method he used was to dissolve calcium hydrate or carbonate in the "iodhydric acid." The diffi-

* Section on Practical Pharmacy and Dispensing, A. PH. A., Portland meeting, 1928.

culty in this case was the preparation of the acid by a practical and convenient method, which up to that time (1883) had not been found. The third and usual process was the decomposition of ferrous or ferric iodide with calcium hydrate. In the first case the iron was precipitated as the "ferrous hydrate" and in the second as "ferric oxyhydrate."

$$2\ FeI_3 + 3\ CaCO_3 + 2\ (OH)_2 \longrightarrow 3\ CaI_2 + Fe_2CO_3(OH_4) + 2\ CO_2$$

The formulas for the Syrup of Calcium Iodide have been quite as varied as those for the salt itself. Eberbach (11), who was among the first to study the syrup, believed that iodine and quicklime formed a mechanical mixture, which when put into hot water, reacted to form both the iodide and iodate of calcium according to the following equation.

$$6\ CaO + 12\ I \longrightarrow 5\ CaI_2 + Ca(IO_3)_2$$

To form a calcium iodide free from iodate he first prepared a solution of "protoiodide" of iron by mixing iodine with a small excess of iron and sufficient water. This mixture was allowed to stand until it was pale green in color, when it was filtered and to the filtrate he added one third as much iodine as was used to make the "protoiodide." Heat was applied and sufficient milk of lime was added to precipitate the iron in the form of "Woehler's granular magnetic oxide of iron" according to the reaction given below.

$$FeI_2 + Fe_2I_6 + 4CaO \longrightarrow Fe_3O_4 + 4\ CaI_2$$

The mixture was then filtered and the precipitate washed with hot water until all the iodide was removed, after which it was brought up to the desired volume. Sugar and Syrup were added to this solution, which resulted in a clear transparent, colorless liquid similar to the present N. F. syrup.

The formula used by Martin (24) was somewhat different than that of Eberbach's. Calcium hydrate was triturated with sugar and after water was added, the mixture was allowed to stand for several hours, being stirred occasionally. It was then filtered and iodine was added. After the iodine dissolved more sugar was added. The resulting preparation was a syrup which had the color of iodine and an alkaline taste.

The Syrup of Calcium appeared in the first edition of the National Formulary in 1888 and has been included in each edition since that time. The following chart briefly outlines the various changes that have been made in the formula from time to time.

FIRST GROUP.

Edition, N. F.	Iron wire.	Iodine.	Ppt. $CaCO_3$.	Sugar.	Syrup water.	Volume of finished syrup.
1888	200 grs.	552 grs.	250 grs.	11 troy ounces	q.s. 16 oz.	16 fl. oz.
1896	28 Gm.	76 Gm.	34 Gm.	700 Gm.	aa. q.s. 1000 cc.	1000 cc.
1906	28 Gm.	76 Gm.	34 Gm.	700 Gm.	aa. q.s.	1000 cc. or 32 fl. oz.
	4000 grs.	1120 grs.	500 grs.	22 troy ounces	1000 cc. or 32 fl. oz.	
1916	28 Gm.	76 Gm.	34 Gm.	700 Gm.	aa. q.s. 1000 cc.	1000 cc.
1925	28 Gm.	76 Gm.	34 Gm.	700 Gm.	aa. q.s. 1000 cc.	1000 cc.

The iron wire is added to a portion of the iodine (57 Gm.) and after water is added the mixture is gently heated until the iodine is combined and the liquid has acquired a greenish color. The excess iron is filtered out and the filtrate is mixed with the remainder of the iodine and solution is affected by gently heating the mixture, care being taken that no iodine is lost by volatilization. To boiling water contained in a capacious dish, small portions of the iron solution and small quantities of the calcium carbonate are added alternately, the carbonate being added first. The mixture is stirred briefly after each addition and water is added from time to time to replace any that may have been lost by evaporation. After all the iron solution and calcium carbonate have been added the mixture is heated until it commences to boil and is then filtered through a wetted filter. The filter is washed with sufficient distilled water to make the product, when cold, measure 500 cc. In this the sugar is dissolved by agitation and the preparation is made up to volume with syrup after which it is strained.

The finished product is a transparent liquid, varying in color from colorless to a faint yellow. It has a characteristic taste. It does not tinge starch paper blue. When mixed with sulphuric acid (11), white calcium carbonate is precipitated and the supernatant liquid turns brown and emits violet vapors of iodine if heated.

This method is very similar to that outlined in Arny's Principles of Pharmacy for the preparation of potassium iodide. In either case, iodine is added to the ferrous iodide to make the more "stable ferric iodide" which is then treated, in the preparation of potassium iodide with potassium carbonate and with calcium carbonate in the preparation of calcium iodide.

$$2\ FeI_3 + 3\ K_2CO_3 + 3\ H_2O \longrightarrow 6\ KI + 3\ CO_2 + 2\ Fe(OH)_2 \quad (25)$$

Caspari (26) refers to this compound formed by the addition of iodine to ferrous iodide as "iodized ferrous iodide."

The various formulas specify that iron wire be the form of iron used. Rother (12) offers an explanation why iron wire rather than iron filings is the desired form. Iron filings must not be used, he states because of the "large amount and the peculiar form of the carbon contained in them. In this mixture a yellow organic acid is generated which yields colorless ferrous salts and orange ferric salts not precipitable by calcium carbonate, but decomposable by a calcium hydrate. The resulting calcium compound of this acid is also orange tinted but is destroyed by the fusion of the iodide, the carbonaceous residue imparting to this a greyish, unsightly appearance. Re-solution of the fused mass and filtration of this solution now produces a colorless salt. Iron wire also contains some carbon, but in a different state of combination, so that none of the peculiar acid is produced. With its use the iron is wholly precipitable by calcium carbonate, even in the presence of excess of iodine, and a white salt is directly obtained on evaporation."

Three groups of samples were used for the experimental work. In the first group two samples were prepared by the N. F. formula. One half of each was bottled before the addition of the sugar. The four bottles containing the samples were stored in a closed case and were exposed to the direct light only at such times as test samples were taken from them. The two saccharine solutions were pale yellow in color and were clear. The two without sugar were also pale yellow and developed a brown precipitate after standing a short time.

The second group of samples were also made from the same formula but by students thus causing the technique to be somewhat varied. There were twenty-eight such samples. They were placed on an open shelf, in the light, their color ranging from colorless to the deep brown color of an iodine solution.

The third group consisted of twenty-two samples, which were prepared by the same students over a year later and were stored in the same manner.

At various times observations were made as to the appearance of the last two groups and the various changes are outlined in the following charts.

SECOND GROUP.

	Date made.	Appearance 5/3/1926.	Appearance 10/13/1926.	Appearance 1/10/1927.	Appearance 3/3/1927.	Appearance 4/18/1927.	Specific gravity.
1	4/27/26	Clear, colorless	Clear, colorless	Clear, colorless	Clear, colorless	Clear, colorless	1.297
2	4/16/26	Slightly cloudy, colorless	Slight white ppt., colorless	Slight white ppt., colorless	Clear, colorless, white ppt.	Clear, colorless, white ppt.	1.3099
3	4/29/26	Clear, colorless	Slight white ppt., colorless	Clear white ppt., colorless	Clear white ppt., colorless	Clear white ppt., colorless	1.2990
4	4/27/26	Clear, faintly yellow	Clear, faintly yellow	Clear, faintly yellow	Clear, faintly yellow	Clear, colorless	....
5	4/27/26	White, cloudy	Colorless, slight white ppt.	Colorless, slight white ppt.	Colorless, slight white ppt.	Colorless, slight white ppt.	1.3303
6	4/23/26	Clear, faintly yellow	Clear, faintly yellow	Clear, faintly yellow	Clear, faintly yellow	Clear, almost colorless	1.2560
7	4/14/26	Clear, faintly yellow	Clear, slight brown ppt.	Clear, faintly yellow, slight brown ppt.	Clear, faintly yellow, slight gray ppt.	Clear, almost colorless, slight gray ppt.	1.3399
8	4/23/26	Clear, faintly yellow	Faintly yellow, slight brown ppt.	Faintly yellow	Pale tan, clear	Clear, colorless	1.3613
9	4/19/26	Clear, faintly yellow	Clear, colorless	Clear, colorless	Clear, colorless	Clear, colorless	1.2800
10	4/17/26	Pale orange, slightly cloudy	Pale yellow, yellow ppt.	Pale yellow, yellow ppt.	Clear, colorless, yellow ppt.	Clear, colorless, yellow ppt.	1.3204
11	4/22/26	Pale orange, slight ppt.	Pale orange, slight ppt.	Pale orange, slight ppt.	Clear, yellow, slight ppt.	Clear, yellow, slight ppt.	1.301
12	4/13/26	Clear, pale orange	Clear, orange-yellow ppt.	Clear, orange-yellow ppt.	Clear, colorless, yellow ppt.	Clear, colorless, yellow ppt.	1.3313
13	4/23/26	Clear, pale orange	Clear, orange-brown ppt.	Pale tan, brown ppt.	Pale tan, brown ppt.	Pale tan, brown ppt.	1.3299
14	4/23/26	Faintly orange, top darker	Pale yellow, yellow ppt.	Pale yellow, yellow ppt.	Pale yellow, yellow ppt.	Pale yellow, yellow ppt.	1.3047
15	4/19/26	Clear, pale yellow	Pale yellow, yellow ppt.	Pale yellow, yellow ppt.	Pale yellow, yellow-gray ppt.	Pale yellow, yellow-gray ppt.	1.2996

16	4/16/26	Faintly orange, top darker	Clear, colorless	Clear, colorless	Clear, colorless	Clear colorless	....
17	4/23/26	Clear, pale orange	Pale orange, clear	Pale orange, clear	Pale yellow, brown ppt.	Pale yellow, brown ppt.	1.3200
18	4/15/26	Pale orange	Pale orange	Pale orange	Pale yellow, slight ppt.	Pale yellow, slight ppt.	1.3400
19	4/19/26	Pale orange, slightly cloudy	Pale yellow-orange ppt.	Pale yellow, yellow ppt.	Clear, colorless, yellow ppt.	Clear, colorless, yellow ppt.	1.3238
20	4/16/26	Pale orange, slightly cloudy	Pale yellow	Clear, colorless	Clear, colorless	Clear, colorless	1.2823
21	4/27/26	Pale orange, cloudy	Pale yellow, orange ppt.	Pale yellow, orange ppt.	Clear, yellow-orange ppt.	Clear, yellow-yellow ppt.	1.3250
22	4/15/26	Pale orange, cloudy	Pale yellow-orange ppt.	Pale tan, orange ppt.	Clear, tan-orange ppt.	Clear tan, brown ppt.	1.3389
23	4/16/26	Clear, pale orange	Light, brown-orange ppt.	Pale tan, orange ppt.	Clear, tan-brown ppt.	Clear, tan-brown ppt.	1.3130
24	4/16/26	Clear, pale tan	Pale yellow, clear	Clear, pale yellow	Clear, pale yellow	Clear, pale yellow	1.3066
25	4/15/26	Tan, cloudy	Pale yellow	Cloudy, pale tan orange ppt.	Tan, brown ppt.	Tan, brown ppt.	1.3450
26	4/23/26	Tan, clear	Clear, yellow	Clear, pale yellow	Clear, colorless	Clear, colorless	1.2915
27	4/23/26	Tan, clear	Tan, clear	Tan, clear	Clear, brown ppt.	Clear, brown ppt.	1.3070
28	4/16/26	Clear, brown	Clear, brown	Clear, brown	Clear, brown	Clear, brown	1.336

THIRD GROUP.

	Date made.	Appearance 3/30/27.	Appearance 2/16/28.	Specific gravity.
1	3/4/27	Sugar crystals, slightly yellow	Sugar ppt., slight color	1.3800
2	3/14/27	Clear, slightly yellow	Brown ppt., dark color	1.2987
3	3/8/27	Clear, slightly yellow darkening at top	Slight color	1.3247
4	3/8/27	Clear, pale yellow	Yellow, slight brown ppt.	1.3508
5	3/3/27	Clear, pale yellow darkening at top	Clear	1.3536
6	3/3/27	Clear, pale tan	Clear	1.3149
7	3/11/27	Pale tan, slightly cloudy	Pale tan, slightly cloudy	1.3369
8	3/4/27	Pale tan, slightly cloudy	Pale tan, slightly cloudy	1.2924
9	3/3/27	Clear tan	Pale yellow, slight brown ppt.	1.3302
10	3/8/27	Tan, cloudy, darkening red-brown ppt.	Clear, brown ppt.	1.3227
11	3/–/27	Orange, cloudy	Cloudy, orange ppt.	1.3398
12	3/7/27	Tan, cloudy	Cloudy tan ppt.	1.3321
13	3/3/27	Tan ppt.	Clear brown ppt.	1.2758
14	3/4/27	Tan, slightly cloudy	Clear	1.2596
15	3/4/27	Cloudy, tan ppt.	Clear, brown ppt.	1.3385
16	3/3/27	Cloudy, tan ppt.	Clear, slight ppt.	1.2194
17	3/11/27	Clear tan	Clear	1.3115
18	3/3/27	Clear tan	Clear tan	1.3200
19	3/10/27	Cloudy tan ppt.	Clear, slight ppt.	1.2820
20	3/8/27	Clear tan	Clear tan	1.2722
21	3/3/27	Cloudy tan	Clear tan	1.3177
22	3/11/27	Clear brown	Clear tan	1.2969

In each case where the syrup was colored there seems to have been a tendency for the color to diminish. Even the deep brown-colored samples seemed to have faded.

The observations on group No. 2 were made over a period of two years, while those on group three were for a period of one year only.

The specific gravities of fifty-two samples, taken from the three groups were determined by the Mohr-Westfall method. They varied from 1.2194 to 1.3800 with 1.3131 being the average.

Samples of the syrups were ashed and after being boiled in a nitric, hydrochloric acid solution were filtered and the filtrates were tested with the following:

a. Potassium ferricyanide, produced no precipitate;

b. Potassium ferricyanide and hydrochloric acid, produced a deep blue precipitate;

c. Ammonium hydroxide, produced a red-brown precipitate; and

d. Ammonium hydroxide and ammonium chloride produced a red-brown precipitate.

Determinations of the total iodide according to the Volhard method as outlined in the U. S. P. under the Syrup of Ferrous Iodide gave the following results from several samples chosen at random. P. C. total iodide: 3.42; 4.83; 2.80; 4.93; 5.89.

In checking up the preparations made by students in the laboratory, attention was called to the yellowish or red-brown color of some of the products. The color of the red-brown products was readily proved to be due to free iodine. However, the faint yellow-colored solution did not respond to the free iodine test. This lead to the application of the iron test with the result that all products gave a positive test for ferrous iron and those colored faintly yellow also for ferric iron when tested soon after preparation. Exposure to light apparently brought about a reduction of the ferric iron in the syrup. The qualitative tests were followed by quantitative tests for total iron computed as ferrous iron, total calcium and total iodide.

An attempt was made to determine quantitatively the amounts of both the calcium and iron present in the same sample.

This was first attempted by boiling a weighed sample of the syrup with nitric acid and then adding ammonium hydroxide and ammonium chloride. The addition of the acid caused a color change and the liberation of iodine in one of the samples. Both samples eventually became yellow. After the ammonium salts had been added the solutions were allowed to stand. They darkened and gradually became cloudy but did not yield a precipitate. After ninety-six hours there still was no apparent change and as no precipitate of iron was obtained it was assumed that the syrup present interfered as it had in a non-acidulated sample to which the ammonium salts had been added.

Samples were then burned but not completely ashed. The black mass was boiled in hydrochloric and nitric acids after which water was added and the carbon was filtered out. To the filtrate potassium iodide and hydrochloric acid were added. The liberated iodine was titrated with sodium thiosulphate, starch being used as the indicator. In one sample a brown precipitate occurred when the thiosulphate was added. The other sample, however, was found to contain 0.684% of iron calculated as free iron.

The next samples were ashed completely and the ash weighed as such. The

ash was dissolved in hydrochloric and nitric acids as before; after the solution was boiled twenty-eight per cent ammonium hydroxide was added until the solution was strongly alkaline and the iron precipitated out as the insoluble red hydroxide. This was filtered and the iron determined in the precipitate and the calcium in the filtrate. The first was done by dissolving the precipitate in hydrochloric acid and adding potassium iodide, allowing the mixture to stand over night. The iodine that was liberated in the process was titrated as before with sodium thiosulphate.

The calcium in the filtrate was precipitated by oxalic acid and the excess acid was then titrated against potassium permanganate, aliquots being used.

The results obtained varied for each sample. Thus one sample was found to contain 2.5% of FeI_2, 9.13% of CaI_2; a second 0.415% of FeI_2, 9.99% of CaI_2. Other assays emphasized the supposition that the content of FeI_2 and CaI_2 varied in each sample. Based on the amounts of iron and calcium found, the amounts of iodine required to form FeI_2 and CaI_2 were computed and these results compared with the total iodine found according to the Volhard method. The results were as follows:

Computed	2.17%, 5.44%
Found	2.75%, 5.59%
Excess	0.58%, 0.15%

A separate sample was assayed for HI, using the hydrogen ion, electrode method. The computed HI was found to be 0.75%.

The results given here are only a portion of those obtained, but are considered to be sufficient for the time being. Based on the information obtained it was assumed that the Syrup of Calcium Iodide when prepared according to the N. F. V formula contained CaI_2, FeI_2 and possibly HI. And that the percentage of each present was influenced by the process used. Hence the investigation of the finished product was discontinued and the investigation of the process and formula begun.

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UNIVERSITY OF WASHINGTON,
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PRESCRIPTION DIFFICULTIES.

BY S. W. MORRISON.

A group of rather difficult prescriptions are submitted for consideration. Many of the following prescriptions were discussed by Prof. C. M. Snow at a recent meeting of the Chicago Branch, A. PH. A., while others were taken from the prescription files of the University of Illinois Dispensary.

I.	Crude Coal Tar	
	Zinc Oxide $\overline{aa}$	2.5
	Starch	
	Petrolatum $\overline{aa}$	16.0

A light grayish brown ointment or a very dark greenish black ointment may be made from the above formula, depending on the method employed. The directions as originally received by the writer from the physician gave a dark greenish black ointment. The crude coal tar, previously washed with water to remove soluble phenols and cresols, was mixed with the zinc oxide and allowed to stand for 8–10 hours. The starch was incorporated with the petrolatum and then the two mixtures were combined. It did not seem necessary to allow the tar mixture to stand any length of time; but there is one objection to this procedure because the tar mixture is extremely thick and sticky, thereby necessitating a great deal of labor on the part of the pharmacist.

A method in which the two powders were incorporated with a mixture of the crude coal tar and the petrolatum proved unsatisfactory.

The simplest method is to mix the zinc oxide and starch with the petrolatum, making a smooth paste, and then adding the crude coal tar, previously mixed with a very small amount of petrolatum to decrease the stickiness. This method produces a brownish ointment with apparently the same therapeutic value as the ointment of darker color. However, a standard dispensing method should be adopted, so that there will be reasonable uniformity in the color of the ointment.

II.	Methenamine
	Potassium Acetate
	Prepare thirty capsules, containing two grains of each component.

The first capsule had cracked and broken into many pieces by the time the last capsule was filled. The capsules became brittle and cracked, but we were at

a loss to explain why the mixture should behave as it did. Potassium acetate alone was filled into capsules and the same condition resulted. The suggestion is offered, that the breaking of the capsules may be due to dehydration of the gelatin, causing the capsule to become brittle.

A prescription of this type can be dispensed if an equal amount of starch is mixed with the ingredients or, better still, the physician should prescribe potassium acetate (separately) in solution.

III.	Epinephrine (1–1000)	℥I
	Antipyrine	
	Resorcin $\overline{aa}$	gr. VI
	Normal Saline Solution qs. ad.	℥I

If the epinephrine solution is placed in a bottle, the resorcin and antipyrine dissolved, and the normal saline solution then added, as is usual, an oily substance will separate. A reaction takes place between the resorcin and the antipyrine forming this oily liquid which settles in the bottom of the bottle. However, a perfectly clear solution is obtained if each of these drugs is dissolved separately in some of the normal saline and then mixed.

IV.	Menthol	
	Camphor $\overline{aa}$	gr. ss
	Zinc Oxide	℥II
	Bismuth Subnitrate	℥III
	Acid Boric	℥I
	Resorcin	gr. XXX
	Olive Oil	
	Lime Water $\overline{aa}$ qs. ad.	℥III
	Dispense without a shake label.	

The physician intended, in this case, that the preparation be dispensed without a shake label. This prescription was prepared by several different methods, but the emulsion would invariably break and, of course, require a shake label. In all cases the camphor and menthol were dissolved in the olive oil. Mixing all the powders (except the resorcin) with the oil and adding the lime water, with shaking, gave a stable product, but on adding the resorcin the emulsion would break. The same trouble occurred when the oil, containing the menthol and camphor, was shaken thoroughly with the lime water, and the powders incorporated last.

In attempting to explain this unusual behavior, it was suggested that possibly the resorcin lowered the surface tension and thus caused the emulsion to break, but we can offer no reason for the following method, which proved satisfactory: Place all the finely divided powders in a bottle with the oil solution, shake thoroughly and then add the lime water with continued agitation.

V.	Boric Acid	15.0
	Zinc Oxide	10.0
	Starch	10.0
	Bismuth Subnitrate	10.0
	Olive Oil	10.0
	Lime Water	10.0
	Lanolin, anhydrous	30.0
	Rose Water	15.0

A soft ointment is intended to be made from this prescription. It involves a number of difficulties, and to obtain a smooth ointment which will remain permanent, without the separation of water, requires special manipulation. First, the olive oil is shaken with the lime water to saponify the oil; the powders are triturated with the rose water into a smooth paste; the lanolin is then mixed with the powders (in paste form) and, last, the olive oil and lime water emulsion is triturated with the mixture.

The main difficulty is in incorporating the large amount of water so that it will not separate. In one ointment, not made properly, the boric acid had crystallized in the aqueous portion which separated.

VI.	Phenol	gtt. XX
	Sodium Bicarbonate	ʒIV
	Magnesium Carbonate	ʒIII
	Glycerin	ʒIV
	Peppermint Water qs. ad.	℥VIII

This prescription had been dispensed as a milky suspension, but when refilled by another pharmacist a solid mass deposited in the bottle. It appears that the magnesium carbonate is the troublesome ingredient. It was suggested that there would be no difficulty if the sodium bicarbonate be dissolved in some of the peppermint water, the glycerin and phenol added and, finally, the magnesium carbonate, with thorough shaking.

VII.	Morphine Sulphate	gr. IV
	Methenamine	ʒII
	Calomel	gr. XX
	Sodium Citrate	ʒI
	Potassium Iodide	ʒIII
	Elixir Terpin Hydrate qs. ad.	ʒIV

A prescription with such a mixture of ingredients causes one to wonder just what purpose it is intended for and its composition should put the pharmacist on the alert for an incompatibility. A grayish colored precipitate formed which was too heavy to be held in suspension. The potassium iodide reduced the calomel to mercurous oxide and metallic mercury. Furthermore, all the sodium citrate would not dissolve in the prescribed vehicle. Of course, some water could be substituted for the elixir but that is not advisable, for the vehicle also contains one of the active therapeutic constituents. Such a mixture should not be dispensed, as written; in this case, after conferring with the physician, the calomel was omitted from the prescription and the amount of sodium citrate was reduced.

UNIVERSITY OF ILLINOIS,
SCHOOL OF PHARMACY.

OUR CHRISTMAS FLOWER.

Our Christmas flower, the poinsettia, was named for Joel Roberts Poinsett, U. S. Minister to Mexico, 1825–1829. Poinsett brought back a number of species of the plant and placed them in the hands of American botanists, who named the flower, which bears the name "fire plant" in Mexico, also "painted leaf." The richness of the green color of the leaves is strengthened by forced feeding of soot, placed on the soil in the pot.

THE HISTORY OF LICORICE IN PHARMACY.*

BY GEORGE D. BEAL[1] AND H. T. LACEY.[2]

"His love al so sweete y wis
So ever as milk or lycorys."
A.D. 1300.

The history of licorice, as old as the history of medicine itself, is replete with folk lore and tales of religious and occult uses. One might hesitate to write the story of this well-known drug. Yet, as Dr. John Uri Lloyd has so aptly said, "Licorice[3] has always been used to such a great extent that it has been generally assumed everybody knew all about it and hence very little has been written concerning it." In every department of human endeavor important discoveries and inventions are made and, after a time forgotten, to be later rediscovered. It may therefore be well to review the interesting history of this drug and its uses in pharmacy.

Glycyrrhiza Glabra[4] is native to an extensive region which includes Southern Europe, Asia Minor and Southern Asia. The plant grows best in the rich soil of the river valleys where at an age of four years, it reaches a height of from two to four feet. The "Licorice Belt" includes within its broad boundaries those regions in which were found the oldest recorded civilizations.

In China, licorice belongs to the drugs of the first class ("Princes") of the "Shen nung Pen Ts'ao King," the oldest of the Pen Ts'ao Chinese books of medicine.[5] This document divides the drugs in three classes and says: "Of the first class of drugs there are 120 kinds; we believe that they have the functions of Princes. They preserve the life of man and therefore resemble Heaven. They are not poisonous. No matter how much you take and how often you use them, they are not harmful. If you wish to make the body supple, improve the breath, become old in years without aging in body, then make use of drugs of this class."

Throughout the ages, China has used large quantities of licorice. To-day, it may still be found, daintily prepared, in all Chinese apothecary shops. With the exception of Ginseng, which is also a drug of the first class, it is used more than any other drug.[6] It is prized as a means of preserving youth and beauty and is charged with the property of rejuvenating those who consume it for long periods.[7] It is used to allay thirst, feverishness, pain, cough and distress of breathing. An infusion of licorice root is also mixed with honey as a topical application to children's burns and whitlows.

Glycyrrhiza plays an important part in medicine according to Brahmanism,

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* An address before Section on Historical Pharmacy, A. PH. A., Portland meeting, 1928.

[1] Assistant Director, Mellon Institute of Industrial Research.

[2] MacAndrews and Forbes Fellow, Mellon Institute of Industrial Research.

[3] Private conversation.

[4] An excellent description of *glycrrhiza glabra* var. *typica* (Spanish licorice) and of *glycrrhiza glabra* var. *glandulifera* (Russian licorice) may be found in the U. S. Pharmacopœia.

[5] A. Tschirch, "Handbuch der Pharmakognosie," II, Lief. 20 (1905), 92.

[6] Simmonds, *Bull. Pharm.* (1894), 205.

[7] F. P. Smith, "Chinese Materia Medica" (1871), 136.

the oldest religion of India. It is one of the principle drugs of the "Susruta,"[1] a text said to have been revealed to Susruta by Brahma himself, who had composed this book before the creation of man. It consisted originally of 100,000 prescriptions and 1000 chapters, which Brahma, however, with consideration for the deficient intelligence of man, shortened to the present size. The 798 medicines of Susruta are all from the plant kingdom. (Here, according to the plans of Brahma, *glycyrrhiza glabra* is recommended as a general tonic, beautifying agent and elixir of life.)

Some of the Oriental mysticism regarding licorice is preserved in the Buddhist religion of India, that "ancient land of brooding mystery." An infusion of licorice root is used for bathing Buddha on the annual celebration of his birth, on the eighth day of the eighth month. On the morning of this festival, this "tea" is poured over the statue of the god three times with great pomp while the priests chant mystical incantations and the worshippers pray. The fluid which drips from the statue is carefully collected and treasured for its curative properties. According to Joret, licorice (Madhuka) is also used as a constituent of a love potion in India.

It is possible that India learned of licorice from the Sumerians, the builders of the tower of Babel. The authors have been informed that recent excavations in the lower Tigris-Euphrates valley have yielded tablets which tell of the use of licorice in this region of the "Paradise" of the Old Testament. The translations, however, are not yet complete.

Licorice was used by the priests in ancient Egypt, although the date of its introduction may be open to speculation. In the Joachim[2] translation of the "Papyrus Ebers" (about 1550 B.C.), "Süss Bier" is used as a constituent of a large number of prescriptions. These include prescriptions for general diseases of the body, disorders of the stomach, intestines and liver, as an external dressing for wounds, as a vaginal douche and in tonics for the nerves, muscles and blood. Foam from the "sweet beer" is prescribed in some cases which seem to require special mystical treatment. "Sweet beer yeast" is also used, but only in prescriptions for external application, such as rubbing lotions and plasters. Honey and sweet beer are often constituents of the same formulas.

In ancient Egypt, honey and sweet fruits, such as figs and dates, were the main source of sweets and later licorice was also used. There is no record of cane sugar being known in Egypt until about 500 A.D. when it was introduced from India. Glycyrrhiza was definitely used in Egypt in the formulas of the Magical Papyrus (100 B.C.) according to the translation of Griffith and Thompson.[3] The name for glycyrrhiza in every known language or the stem from which the name is derived means "sweet root" or "sweet wood." It has been conceived that the "Süss Bier" in Joachim's translation of "Papyrus Ebers" was prepared from glycyrrhiza, or at least that "Süssholz" is the sweetening agent.

It has been remarked that "history is but the personal column of the ages." This seems to be also true of the history of licorice in pharmacy and the following

[1] First published by Sri Madusudona gysta, Calcutta, 1836.

[2] Heinrich Joachim, "Papyrus Ebers," Berlin (1890).

[3] E. Ll. Griffith and H. Thompson, "The Demotic Magical Papyrus of London and Leiden" (1904).

references may give us some idea of the part licorice has played in the pharmacy of our own historic period.

Theophrastus,[1] the "Father of Greek Botany," the noted Greek physician, pupil and friend of Aristotle, seems to be the first to describe glycyrrhiza in the Greek literature. In his famous "Inquiry into Plants" he wrote "Scythian root (licorice) is also sweet; some, in fact, call it simply 'sweet root.' It is useful against asthma or dry cough and in general troubles of the chest and is also administered in honey for wounds. It has the property of quencing thirst, if one holds it in the mouth; wherefore they say that the Scythians, with this and mares-milk-cheese, can go for eleven or twelve days without drinking."

Hippocrates[2] (460–357 B.C.) mentions licorice as an external application with honey or ointment for sores. According to Flückiger,[3] licorice extract in the solid form has been used since the time of Dioskurides,[4] who observed that "the extract counteracts the inflammation of the oral cavity."

Pontus also noted that its juice is preserved by inspissation and that it is useful in hoarseness, sore throat and internal inflammations, and that it quenches thirst. Plinius[5] (23–79 A.D.) describes the plant as a native of Cicilia and reviews the uses of the root and extract. Aurelius Celus (−30 A.D.) and Scribonius Largus[6] each mention licorice as "Radi dulcis" and tell of the use of the succus in Pastilles.

Andromachus of Crete, Nero's physician, takes "cyanea glycyrrhizæ" (succus glycyrrhizæ) as one of the more than 60 constituents of his celebrated "theriaka." The formula for this theriaka is reproduced in full by LaWall.[7] Galen (130–210 A.D.) adds that licorice is slightly astringent and notes that, while it is one of the principal sweets, it is almost the only substance of that class that tends to abate thirst. Because of this property the Greeks called it "adipson" and used it, as Galen observes, in hydropic cafes for alleviating the desire for drinking. P. Oribasius (325–400 A.D.) Marcellus Empiricus, in the service of Emperor Theodosius from Bordeaux (about 400 A.D.) Paulos Aeginetes (7th Century A.D.) one of the most noted doctors of his time, and Alexander Tallianus all prescribed licorice, although they added nothing new to its use.

It will be seen from this evidence that licorice and the extract were in general use throughout Southern Europe during the middle ages. The cultivation of licorice in Europe, however, does not date from a very remote period, as we may conclude from the absence of the name in early mediæval lists of cultivated plants. It is not enumerated among the plants which Charlemagne ordered (A.D. 812) to be introduced from Italy into Central Europe[8] nor among the herbs of the convent gardens as described by Walafridus Strabus,[9] abbot of Reichenau, Lake of Constance (9th Century A.D.), nor yet in the copious list of herbs contained in the

[1] E. Theophrastus, "Inquiry into Plants," IX (270 B.C.), 13.
[2] Dierbach, "Arzneimitteln des Hippocrates," 75.
[3] F. A. Flückiger, "Pharmakognosie des Pflanzenreiches," 3rd Edition (1891).
[4] P. Dioskurides, III, 5 (100 A.D.), Edition by Kühn, I, 346.
[5] Plinius, XXII, 11; II, 78 in Littre's translation.
[6] Scribonius Largus, LXXXVI—Hebreich's translation, 37.
[7] C. H. LaWall, "Four Thousand Years of Pharmacy," Philadelphia (1927), 213.
[8] Flückiger and Hanbury, Pharmacographia, 2nd Edition (1879).
[9] Walafridus Strabus, Legum., I (1835), 186.

vocabulary of Alfric, archbishop of Canterbury (10th Century).[1] In Germany, neither Carls Capitulari, the St. Gabler Klosterplan, the Hortulus nor Macer Floridus mention licorice.

Matthaus Platearius (1140) and Petrode Crescenzie[2] (1235–1320) mention the cultivation of the root in Italy. They also describe the preparation of the extract. The cultivation of licorice began in Spain about the same time as in Italy and it spread rapidly to France, Germany, England and Holland. The most authoritative accounts of the cultivation of licorice "on the Acker" near Bamberg, Bavaria, trace it to the Benedictine Monks of the Michaelsberg Monastery, who in the Fifteenth Century brought the licorice to Germany from Italy and Spain. An interesting story originated near this monastery.

As the supreme test for admission to the Agricultural Guild of Bamberg, each candidate was required to dig from the ground a mature licorice plant with all of its roots and runners intact. That this was no easy task is evident, when it is remembered that the tap root penetrates the ground to a depth of several feet, with runners, sometimes twenty-five feet long, spreading out in every direction and interlocking with those of neighboring plants.

In A.D. 1264, "Liquorice" is charged in the Wardrobe Accounts of Henry III[3] and as the article cost 3d per pound (one third the price of cinnamon) it is probable that the extract and not the mere root was intended. In the Patent of Pontage, granted by Edward I, A.D. 1305, to aid in repairing the London Bridge, permission is given to lay toll on various foreign commodities including "liquorice."[4]

During the reign of Queen Elizabeth, licorice was cultivated in England in the neighborhood of the proud, historic Pontefract castle. Later its cultivation was discontinued in England due to the fact that the root could again be imported cheaper from Spain. But to this day, licorice candies, called "Pontefract Cakes," having the battlements of the picturesque old castle imprinted on them, are widely sold in England. Similar licorice candies also appeared in Germany at about this same time with the Reichsadler stamped on them.

Saladinus[5] names it among the drugs kept by the Italian apothecaries. It is also enumerated in a list of drugs of the city of Frankfort written about the year 1450.[6] Dorsten,[7] in the first half of the 16th Century, mentions the licorice plant as abundant in many parts of Italy, and describes the method of making the Succus by crushing and boiling the fresh root.

Dr. J. Quincy,[8] under the classification of liquorice says: "There is not perhaps any one Simple so much used in Medicine as this is, both in Shops and extemporaneous Prescriptions. It is very sweet upon the Palate, even more so than Sugar or Honey, and is yet accounted a Slacker of Thirst; for which Reason Galen ordered it in Dropsies. It is very Balsamick and Detergent, insomuch that there is hardly

[1] Wright, Volume of Vocabularies (1857).
[2] Crescenzi, Libro della Agricoluia, Venet. (1311).
[3] Rogers, "Hist. of Agriculture and Prices," II (1866), 543.
[4] "Chronicles of London Bridge" (1827), 155.
[5] Saladinus, "Compendium Aromatorium" (1488).
[6] Flückiger, "Die Frankfrute Liste," Halle, No. 204 (1873), 10.
[7] Dorsten, "Botanicon, Francof." (1540), 175.
[8] J. Quincy, "Pharmacopœia Officinalis et Extemporanea," No. 301, 1719 (London).

an official Medicine or occasional Prescription for any of the Distempers of the Breast but what have more or less of this for an Ingredient. Although it is so very detergent—yet it has likewise somewhat so soft and even emollient in its Composition, as to soften tickling Defluxions, and give relief in Catarrhs, which makes it of great esteem in Coughs of all Kinds. It promotes Expectoration, and is serviceable in Asthmas, Difficulties of Breathing, Pleurisies, Tubercles and Erosions of the Lungs. For these Intentions, it enters into Pectorals of all Forms. It is almost as constant, likewise among the Deobstruents; and is prescribed in the Jaundice, in Hypochondriacal Affections, and among Diureticks. It has its share also as a *Corrector of some Catharticks;* and *Infusions of Senna and Rhubarb are hardly ever ordered without it.* In short, it is almost of universal use and is hardly superfluous in any one Intention."

Pomet,[1] Chief Druggist of Louis XIV, writes "The use of Licorice is too well known for me to need to describe it." He then adds, "It is one of the best Pectorals in the World, opens obstructions of the Breast and Lungs; eases griping of the Bowels and Cholick, and is good to mix with Catharticks. It cures Ulcers of Kidneys and Bladder, allays Sharpness of Urine, and passing of Blood, is singularly useful against Coughs, Colds, Asthmas, Wheezing, difficulty of Breathing and other Diseases of those parts."

John Wade,[2] a pharmacist of England, prepared a "Balsam of Liquorice" and offered it to the public in the year 1764. He "appealed to the universally known virtues of liquorice," and according to reports "no man was found who could depreciate its efficacy."

Wm. Lewis[3] observes that, "liquorice, one of the principle sweets, is almost the only one of the common substances of that class which tends to abate thirst. It is a useful emollient and incrassant in defluxions of the breast, and supposed to prove at the same time gently detergent. Infusions and extracts, made from it, afford likewise very commodious vehicles or intermedia for the exhibition of other medicines; the liquorice taste concealing that of unpalatable drugs more effectively than syrups or any of the sweets of the saccharine kind."

Wm. Cullen[4] makes a mistake in his identification of the sweet principle of the licorice root, having apparently relied upon only his sense of taste. He says of glycyrrhiza, "This is a well-known root, which affords a large proportion of saccharine matter; and when that is extracted by itself, it does not differ from common sugar and therefore does not differ from it in any of its medicinal qualities. I observe that, in the sweet of liquorice, separate from the root, I do not find that it quenches thirst more than other sweets, and I take the *mistaken notion* to have arisen from this, that if a piece of the root is chewed 'till the whole of the sweetness is extracted, that further chewing brings out the acrid and bitterish matter, which stimulates the mouth and fauces so as to produce an excretion of fluid and thereby takes off the thirst which the sweetness has produced.

"I have only further to repeat, that as the sweetness of liquorice is no other than that of sugar, so we can ascribe no other medicinal qualities to it. It is al-

[1] Pomet, "History of Drugs," 4th Edition (1748).
[2] John Wade, "Balsam of Liquorice" (1797), 13.
[3] Wm. Lewis, Materia Medica (1768), 296.
[4] Wm. Cullen, Materia Medica, II (1789), 406.

leged that it has some mucilaginous matter joined with its sweetness by which it may be a more powerful demulcent than sugar."

This opinion of Cullen's seems to have greatly influenced the pharmaceutical use of licorice for some time and to have limited its use to that of a demulcent and expectorant and as a vehicle to disguise the taste of fluid medicinals. Each of the ten editions of A. T. Thompson's Materia Medica carries this note with a reference to Cullen's Materia Medica: "Note: The ancients believed that chewing the root allayed thirst; but this opinion was founded on a mistake." Thompson[1] says further; "Liquorice root is a pleasant demulcent; but on account of its bulk it is rarely used in substance. The decoction of it, either alone or in combination with other mucilaginous vegetables, is often given in catarrh and in hectic and phthisical cases. It is also administered in some cases of dyspepsia, when there is a deficiency of the natural mucous of the stomach, which is injured by the acrimony of ill-digested food and a morbid state of its secreted fluids."

A. Stille[2] says of an infusion of the licorice root: "It is also a very useful drink in febrile affections attended with much thirst, in diarrhea, dysentery, diseases of the urinary passages, bronchial inflammations, etc. In these cases it is usual to employ either the root or extract as an addition to mucilaginous infusions, as of flaxseed, barley, gum, etc.

In an article, "On the Use of Pulvis Glycyrrhizæ Compositus, a Laxative Preparation of the Prussian Pharmacopœia," D. Page[3] expresses the opinion, after 2 years, daily testing its efficacy as a laxative medicine: " 'cite, tute, et jucunde' (putting in motion, protecting, pleasing) may be said, I think, of the way in which the elegant preparation under consideration acts."—Composition:

Senna leaves	vj
Liquorice root	vj
Fennel seeds	iij
Sulphur	iij
Refined sugar	xviij

"The active ingredients are senna and sulphur. The action of the former, when administered alone, is frequently accompanied by tormina, and the continued use is apt to cause derangement of the mucous membrane of the upper intestine. The physiological action of the sulphur appears to be upon the muscular coat and less upon the mucous surface, while senna is a more active purgative, more apt to excite tormina and acts more upon the mucous than upon the muscular coat. By the aromatic and stimulant properties of the fennel, and the demulcent action of the liquorice, itself a mild laxative, the effects of the more active constituents are judiciously modified.

"I have said that constipation most commonly results from functional derangements. Constipation connected with the simpler forms of structural disease, such as piles, fissures of the anus and prolapsus, is also effectually treated by the powder.

"Dr. Warburton Begbie writing to me lately says: 'Your experience of the Compound Liquorice Powder fully confirms my own, and that in every particular;

[1] A. T. Thompson, Materia Medica, II (1844), 464, (10th Edition).
[2] A. Stille, "Therapeutics and Materia Medica" (1868), Phila.
[3] D. Page, Practitioner, London, VIII (1872), 276.

I have found it especially useful in *young* and *old* subjects.—You are correct in supposing that it was introduced into practice here by me. I had the prescription from a gentleman long resident in Breslau, for whom the powder had been ordered by the distinguished Hasse. It certainly is an admirably arranged powder.' "

Flückiger and Hanbury state that "The powdered root is used to impart stiffness to pill masses and to prevent the adhesion of pills. Liquorice has a remarkable power of covering the flavour of nauseous medicines. As a domestic medicine, liquorice root is far more largely used on the Continent than in Great Britain."

M. Berleur[1] mentions the use of a cold water extract of the root as a drink in the Belgian army while on campaign and remarks that this use is analogous to its use in the French armies. The authors have recently been informed that the "coco" which the soldiers of the French army receive for drinking purposes is a cold water infusion of licorice mass. During the late World War, the French government supplied its troops with this beverage at all times whether on the march or in the trenches and even at the present time, is said to use about 300 tons of root annually for this purpose.

Throughout southern Europe non-alcoholic beverages made from water infusions of either licorice root or licorice paste, have been very popular for generations. The value of licorice as a tonic and "blood purifier" has long been recognized and large amounts of licorice beverages are drunk by the people during the spring and summer months. In most of the factories of France and especially in the iron and steel mills it is given to workers for drinking purposes instead of plain water, for it has been found that they are thus better enabled to stand intense heat.

In Egypt hundreds of tons of licorice root are still used each year, in making a drink known as "mai sus" (licorice water) which is an infusion of the root in cold water. Now it is a favorite drink among the poorer classes at social gatherings and weddings, where handfuls of the milled root are thrown into large earthenware jars of drinking water. In Turkey, the well-known vendor of licorice water and sherbets, with a brass urn on his back, is a noticeable and picturesque figure.

Khory & Katrak[2] in discussing the more recent pharmaceutical uses of licorice in India say, "It is given in inflammatory affections, catarrhs, cough, hoarseness of voice, asthma and in irritation of the larynx, bronchi and of the urinary passages. The compound powder is used as a laxative in constipation. Glycyrrhizic acid is used for flavoring decoctions, also covering the taste of nauseous drugs in a liquid form as quinine, chloride of ammonia, *sulphate of magnesia*, senna, senega, hyoscyamus, ipecacuanha, aloes, etc. The powder (root) is used as an excipient in pills."

The chief rôle which licorice is playing in pharmacy at the present time is in covering the acrid taste of various drugs. The amount used for this purpose is steadily decreasing, due probably to two reasons:—(1) Liquid decoctions are rapidly being replaced by the use of pills and (2) Eriodictyon (Yerba Santa)[3] is now being used to some extent in the place of fluidextract of glycyrrhiza and ammoniated glycyrrhizin as a corrigent.

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[1] M. Berleur, *Arch. Med. Belges.*, Brux. (1894).

[2] Khory and Katrak, "Materia Medica of India and Their Therapeutics" (1903).

[3] H. C. Fuller, "Chemistry and Analysis of Drugs and Medicines," 438–441. Power, Tutin and Clewer, PROC. A. PH. A., 54 (1906), 352; *Trans. Chem. Soc.* (1909), 81; *Trans. Chem. Soc.*, 97 (1910), 2054.

The pharmaceutical use of licorice as a constituent of cough syrups, throat lozenges and pastilles is, of course, well known in this country. Its use for this purpose is even more extensive in Europe, however, where the varieties of lozenges and pastilles offered to the public are to say the least very numerous. (In England licorice reaches the height of its use in the confectionery industry.)

Geo. S. Keith,[1] in an interesting book, has recently told of his experience with licorice: "Liquorice as a remedy has hitherto been very little known, if at all. But it has some most useful properties. For relieving the symptoms caused by acrid matters in the stomach, I know nothing to equal it, and I have used it for this purpose for at least forty years. It does not, like the alkalies, convert acids into more or less inert salts, but it seems to remove their irritating effects in some other way and the result in relieving the irritation of the nerves of the stomach is much the same. Many object to the use of alkalies, especially of soda if used frequently and in large quantities as it often is, as injuring the coats of the stomach and thus doing permanent mischief.—But this evil does not attend the use of liquorice. It, in some way of its own—for it is neither from mere dilution nor from neutralizing the acid—removes the irritable quality of the acid or acrid mass and adds nothing deleterious to the contents of the stomach. It certainly relieves, often in a very remarkable way, the innumerable pains and discomforts, which arise from irritations of the gastric nerves.—I have known relief from liquorice in a very large number of cases, both of dyspepsia and sleeplessness.

"Liquorice may, of course, be abused if taken to enable one to consume with less immediate discomfort too much or improper food, but of itself it seems to have no evil qualities whatever.—To most people it is pleasant to take and I have sometimes given it in considerable quantity.

"Many years ago when visiting in East Lothian, a Doctor told me he had found liquorice very useful in a way I had not known. Many farm servants, who smoked strong tobacco, could not look at breakfast 'til they had had a smoke; this was always relieved by taking a bit of liquorice on getting up. He had got great credit from their wives for this prescription, so I concluded that the men's temper had also suffered. This is the only doctor I have met who knew the value of liquorice.

"I have heard recently of many who have gotten much benefit from liquorice. Messrs. Hillaby, large manufacturers of Pontefract cakes, etc., wrote me that their work women, when pregnant, took it in large quantities as it kept off sickness. I have long used it in the same cases."

Knut Hamsun, who was awarded the Nobel Prize for Literature, makes the following reference in his well-known novel, "Growth of the Soil," to the beneficial properties of licorice: "For internal complaints, he dosed himself with Treak boiled in milk to make him sweat. Liquorice it was, bought at the store, an old and tried remedy, the Teriak of the ancients. No doctor was ever sent for to Sellanraa."

The names, "Treak" and "Teriak," mentioned in this work are undoubtedly derived from the Theriaca or Treacle of the ancients. The meaning, however, has changed in the course of time. "Teriak"[2] is an old Norwegian expression for coun-

[1] Geo. S. Keith, "Fads of an Old Physician," London, Chap. VI (1900), 3rd Edition.

[2] Communication from Scandinavian friends.

ter-poison, and "Treak" is an old Norwegian name for licorice. It seems that "Treak" has been recommended from time of old as the best remedy and counter-poison for internal complaints.

It might be well to briefly review the chemistry of licorice. Several valuable papers in the literature deal with the chemistry of licorice root and licorice extract.

Houseman's[1] articles dealing with the chemical analysis of licorice are the most authoritative. The constituents of licorice root, aside from the fibrous material, are glycyrrhizin, starch, gums, resins, reducing sugars, a small amount of sucrose and asparagin, traces of tannins, a saponin and a yellow dye, which dyes silk a pale but fast yellow. The saponin is haemolytically active but occurs in only minute amounts in the inner bark of the root; not in the outer bark nor in the central part of the root. It is not present in the commercial paste.

The researches by Tschirch,[2] P. Karrer[3] and their pupils furnish the best sources of information regarding the chemistry of glycyrrhizin, the sweet principle of licorice, which is approximately fifty times as sweet as cane-sugar. Although these men differ regarding the molecular formula and molecular weight of glycyrrhizic acid, they agree that upon hydrolysis glycyrrhizic acid yields one molecule of glycyrrhetic acid and two molecules of glucuronic acid. M. Galassi,[4] in a recent paper, maintains that glycyrrhizic acid yields 2 mols. of gluconic acid upon hydrolysis instead of glucuronic acid as claimed by Tschirch. In the opinion of the authors, the experimental work presented in this latter paper does not warrant the conclusions which have been arrived at.

In 1902, Mandel & Jackson[5] administered camphor to fasting dogs and noted the excretion of glucuronic acid as camphor glucuronic acid. In a series of researches, Quick[6] has recently shown glucuronic acid to be a valuable detoxifying agent. He has found that glucuronic acid is conjugated both with phenolic types of compounds and with various aromatic acids. It therefore seems reasonable to suppose that, if the glycyrrhizic acid yields glucuronic acid as a product of hydrolysis in the process of metabolism, licorice should be of value as a detoxifying agent.

A note by A. R. Cushny[7] makes it seem probable that such hydrolysis actually takes place. This states that glycyrrhizin is probably decomposed in the body; the urine is often found to contain a reducing body after the administration of liquorice.

Luigi Tocco[8] has demonstrated that ammoniated glycyrrhizin has a toxic action on unicellular organisms and on fish at a dilution of 1:2000. Administered to a dog by way of the mouth in doses of 1 to 2 Gm. per Kg. of animal weight,

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[1] P. A. Houseman, *American Journal of Pharmacy* (Dec. 1912), 531; *Ibid.* (March 1916), 97; *Ibid.* (June 1921), 388; *Ibid.* (July 1921), 455 and 481; *Ibid.* (Feb. 1922), 191.

[2] Tschirch and Cederberg, *Arch. Pharm.*, 245 (1907), 97. Tschirch and Gauchmann, *Ibid.*, 246 (1908), 545. Tschirch and Gauchmann, *Ibid.*, 247 (1909), 121.

[3] P. Karrer, W. Karrer and J. C. Chao, *Helv. Chim. Acta*, 4 (1921), 100.

[4] M. Galassi, *Arch. farmacol. sper.*, 43 (1927), 231.

[5] Mandel and Jackson, *Am. J. Phys.*, VIII (1902).

[6] A. J. Quick, *J. Biol. Chem.*, 61 (1924), 667; *Ibid.*, 61 (1924), 679; *Ibid.*, 69 (1926), 549; *Ibid.*, 70 (1926), 59; *Ibid.*, 70 (1926), 397; *Ibid.*, 74 (1927), 331; *Ibid.*, 77 (1928), 581.

[7] A. R. Cushny, "A Textbook of Pharmacology and Therapeutics," 48 (1910), Phila.

[8] Luigi Tocco, *Arch. intern. pharmacodynamie*, 28 (1923), 11; Tocco-Tocco, L., *Ibid.*, 28 (1924), 445 and 455.

glycyrrhizin acts only as a mild physic. Injected subcutaneously in doses of 2 Gm. per Kg. of the dog's weight, it produces symptoms of general depression. Injected intravenously, ammonium glycyrrhizinate is fatal to a dog in a dose of 0.45 to 0.5 Gm. per Kg. of animal weight and fatal to a rabbit in a dose of 1.0 Gm. per Kg. of animal weight—it acts first as a depressant and then paralyzes the inhibitory and stimulating apparatus of the heart and of the myocardium and acts similarly upon the motor nerves and their muscles; death occurs in from 6 to 7 hours. Applied to the brain or injected into the spinal canal, it gives rise to phenomena of depression and loss of sensibility to pain followed by the death of the animal. When dissolved in the mouth, glycyrrhizin also depresses the sensitivity of the olfactory nerves and of the gustatory nerve endings.

In a humorous article entitled "A Fatal Dose of Glycyrrhizin; a Warning to Apprentices" and signed "Veracita,"[1] the author facetiously assumes from Tocco's work that eating licorice will have the same effect on an apprentice as the injection of the material has on the dog and assures them that they should be thankful for all of the narrow escapes that they have had. Assuming the weight of the average apprentice to be 100 lbs. the author proves mathematically that they should not eat more than a half pound of licorice root or a quarter pound of licorice extract at one sitting without expecting to be at least ill afterwards. In conclusion he writes "The moral of all this is an old one—'Don't be greedy.' "

From the history of its use we would be inclined to believe that the eating of licorice in reasonable amounts might be very beneficial. Dr. Hugh S. Cumming, Surgeon-General of the United States Public Health Service, has expressed the opinion that any custom that has held its own for generations usually has something back of it, no matter how little it appears to be supported by modern science. He says in part, "For thousands of years, the Chinese have prescribed the heads of powdered toad fish as a remedy for heart trouble, and now adrenalin, the most up-to-date drug for the treatment of heart disease, has been found to exist in the head glands of that fish.

"For generations the fact that the American Indian hunters always chose the liver and the white men the meat when the animals they had trapped or killed were divided, was quoted as proof of their ignorance and primitive development. Yet in the last five years the great nutritive value of liver has come to be recognized and it is prescribed in cases of anemia."

The use of licorice as a tonic by the Chinese and Hindus for thousands of years and by the people of Egypt and Southern Europe for countless generations, and the use of licorice as a counter-posion by the Norwegians since ancient times, may be proved to be founded upon scientific fact. The work of Tschirch, Karrer and Quick, we believe to be a step in the right direction. The use which Dr. Keith rediscovered for licorice, its use as a remedy for acid stomach and inflammation of the bowels may have its partial answer in the preliminary work of L. Tocco. The history and chemistry of licorice might therefore lead us to believe that licorice may yet occupy a more valuable place in Pharmacy than that which it now holds.

PITTSBURGH, PA.
August 1, 1928.

[1] *J. Pharm.* (June 9, 1928), 559.

THE LOUIS HÉBERT MONUMENT.*

BY JOSIAH C. AND BERTHA L. DEG. PEACOCK.

Under the title "Historical Sketches of Old Drug Stores in This Country," Otto Raubenheimer contributed an article to the October 1927 number of the *Druggists Circular*.

In that article under the sub-title of "First Apothecaries in North America," this well-known historian of pharmacy gives a paragraph on Louis Hébert, which we now quote:

> 1606. The apothicaire Louis Hébert arrived in Canada from France. In 1616 he went back, brought over his family, and settled at Port Royal, now Annapolis, Nova Scotia. He, as did his successor, Dr. Robert Giffard, made his livelihood at farming and practiced the healing art as charity.

The writers having a few months before come upon The Hébert Monument in the City of Quebec, Canada, and having been impressed with this memorial to one of North America's earliest apothecaries, decided to bring a notice of the existence of this monument to the attention of this section of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The fullest description of the monument that we have found is contained in "Carrel's Guide to Quebec," a pamphlet presented with this article.

This reference reads as follows:

> THE HÉBERT MONUMENT.
>
> This monument erected to the glory of Louis Hébert, and which is situated at the corner of the City Hall garden, between it and Ste. Anne street, is the work of the French-Canadian sculptor Alfred Laliberté. It represents the first colonist of Canada, standing on the pedestal, offering to the God of Harvest the first sheaf of wheat harvested from Quebec soil. At the base of the pedestal, to the left, we see a group of children surrounding the courageous wife of Louis Hébert, Marie Rollet, justly considered as the first teacher in the country; to the right is represented, full of nobility and pride, the son-in-law of Louis Hébert, Guillaumé Couillard, the first to till Canadian soil.
>
> The base of the monument is also ornamented with sheaves of wheat, and bears the arms of the city of Quebec, and the Province, with the device "Je me Souviens," and that of the first family with the following inscription "Dieu aide au premier colon."
>
> On a brass plate are inscribed the names of the first colonists of Quebec.
>
> The monument is seventeen feet high; the statue itself measures eight. This work cost about $17,000, subscribed among the population of the Province of Quebec. The Provincial Government and the municipalities of Quebec and Montreal also subscribed substantial amounts.
>
> The land owned by Louis Hébert, comprised in Upper Town all the land now belonging to Laval University, the Basilica, the Seminary, and the residences on Couillard and Hébert Streets. By the concession made to him of this land, Louis Hébert became the first seigneur of New-France. At the same time he was owner of another tract of land on the St. Charles River.

Near the base of the shaft, as can be seen on the postcard picture[1] there are on obverse and reverse sides the following inscription in French and English:

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* Presented to the Historical Section of AMERICAN PHARMACEUTICAL ASSOCIATION at the Portland, Maine meeting, August 1928.

[1] Presented by the authors.

LOUIS HÉBERT.

Louis Hébert apothicaire de Paris explora l'Acadie en 1604 avec M. M. de Monts et de Poutricourt et y sejourna de 1606 a 1613. Il s'etablit a Quebec en 1617 avec sa famille et mourut le 26 Janvier 1627.

LOUIS HÉBERT.

Louis Hébert Apothecary of Paris explored Acadia in 1604 with Mr. de Monts and de Poutricourt and sojourned from 1606 to 1613. He established himself in Quebec in 1617 with his family and died the 26th of January 1627.

In a hurried search for a fuller and better narrative of Hébert, we found the following reference in the volume "Old Quebec" by Gilbert Parker and Claude G. Bryan.

Page 38.—"When Lewis Kirke the Admiral's brother, took possession of the city in the name of King Charles, he treated his captives with high courtesy. The French inhabitants were given the option of remaining in peaceful possession of their homes, or being transported back to France. Louis Hébert, the Chemist, and his relatives, the Couillards, the only two families of colonists in the strict sense of the word, elected to remain on their small holdings."

Page 47.—"For a hundred years or more, New France was dependent on old France for provisions and even up to the death of Champlain, there were, in fact, only two plots of ground under cultivation by French settlers—that of Louis Hébert in Upper Town, and the small farm of the Récollects on the St. Charles."

Page 55.—"The Ursulines, with less caution began to build their tiny convent in the neighboring woods. The first Hotel-Dieu was rising on the cliff overlooking the valley of the St. Charles, and not far away was the new farm of Louis Hébert, the chemist—all together making a picture of progress."

When one views the Hébert Monument he is likely to become meditative, for it symbolizes much of the fundamental necessities of life itself as well as of pharmacy as a vocation. To put this another way, it portrays the advisability of digging, planting and cultivating if one is to harvest a crop of encouraging results; and that inspiration both the farmer and pharmacist well may take from seeing this memorial to a man of such manifest determination.

GUILD OF PUBLIC PHARMACISTS.

The Guild of Public Pharmacists and friends, on November 21st, attended a reception at the Wellcome Museum, London, arranged through the courtesy of the Museum authorities. The *Pharmaceutical Journal* states: "The extent to which the history of medicine is the story of the human race in every phase of its development from primitive times, can be realized with some degree of fullness when studying the contents of the many fine exhibition cases in this unique collection. The numerous fine oil paintings were much appreciated, as also was the Hall of Statues. The section illustrating the work of the late Lord Lister and containing a portion of an original ward from the Royal Infirmary, Glasgow, wherein much of the famous surgeon's work was done, attracted a good deal of attention. The London apothecary's and chemist's shops of the seventeenth and eighteenth centuries, respectively, excited great interest, whilst the beautiful blue pottery of the Italian pharmacy of 300 years ago was much admired."

THE PHARMACIST AS A PROFESSIONAL AND A COMMERCIAL MAN.*

BY HAROLD WATT HUTCHINS.†

Many newspapers and drug publications have reported the speeches made at state pharmaceutical associations. Some of these newspaper and other reports are as follows:

Tells Why Tests Balk Drug Clerks

Only about 30 per cent of the applicants for licenses in (such and such a state) as registered pharmacists pass the state tests in these days of alarm clocks, cosmetic and soda water drug stores, Mr. (So and So) told the convention of the pharmaceutical association of that state.

These young druggists of the present generation, Mr. (So and So) pointed out, obtain their experience in shops more like department stores than pharmacies. He said the law requiring four years' experience in a drug store did not mean much, since the experience was largely clerking instead of compounding drugs.

Another report follows:

Deplores Commercialism

Prof. (Blank) of the (Blank) College of Pharmacy gave an address in which he urged druggists to stick to the selling of drugs and herbs, and cease to emulate the department and novelty store.

Portions of still another report that received much newspaper publicity follows:

Raps Drug Clerks Selling Sodas

Drug store proprietors were called to account to-day by Professor (X), who spoke before the (Blank) Pharmaceutical Association's convention.

He accused the drug store proprietor of being an exploiter of the pharmaceutical student instead of his perceptor; that he put the students to work squeezing oranges, selling lipsticks, flirting with pretty girls and making chocolate ice cream sodas instead of giving him an opportunity to familiarize himself with the drug business.

"You gentlemen are not sympathetic with the aspirations of our students when they apply to you for summer jobs. You keep them busy with non-professional duties, with the result that they return to college with a better knowledge of how to make 'lovers' delight special' than how to fill prescriptions."

WHAT IS THE SOLUTION?

Undoubtedly many druggists reading these and similar statements are wondering if every pharmacist is to provide a porter or professional soda dispenser to tend the fountain? Can the druggist help it if the clerk flirts with pretty girls? Is it unprofessional for the student-clerk to sell a lipstick? How can druggists stick to selling drugs and herbs if there are not enough buyers for them to keep them busy? Suppose most of the clerk's experience is in the front of the store instead of the rear, is that any reason that he is not a good modern pharmacist, even though 70 per cent of his kind flunk the state board examinations? Perhaps they are asked to pass the type of examination that was given when the clerk's time was spent mostly in the rear of the store instead of the front.

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* Presented to Section on Commercial Interests, A. PH. A., Portland meeting, 1928.

† Associate Editor, *Druggists Circular*.

DESTRUCTIVE CRITICISM BAD.

The writer does not wish to enter into a controversy on the subject with anyone, but it has become tiresome to hear illogical speeches made, year after year, by men who are diligent in their own particular field of pharmacy, and have little or no sympathy for anyone not doing as they think should be done, regardless of what changing conditions may require the other fellow to do. The inference in all such statements as have been quoted is that the pharmacist is deliberately commercializing his store, which, of course, is an erroneous one.

The fact is that quite regularly a college professor, a professional pharmacist or some other person having just a professional outlook on pharmacy breaks out in print, speeches or rashes, over the present-day status of pharmacy and pharmacists.

It has put a crimp in the morale of pharmacy at large. Some men are practicing commercialism in their stores, and preaching professionalism at their state meetings. They are afraid of being accused of helping to pull the profession of pharmacy down, of being called *unethical* by someone who does not know the meaning of the word.

It is a fine thing to have professional men talk about their experiences or beliefs, but not when they imply that those not running a strictly professional store are on the wrong track. In no community is there room for more than a few Lascoffs, F. E. Morgans, Hynson, Westcott and Dunnings, Leonard Seltzers and that type of professional pharmacists. Certain conditions, over which druggists have no control, force the bulk of them to commercialize—or to specialize, if you please—just as the medical profession, made up of graduate physicians, establish themselves in different fields of the practice of medicine. There is not manifest any legitimate reason for qualified graduates in pharmacy not to specialize in different fields, some in the professional, others in the commercial, and still others in the manufacturing, teaching or journalistic fields. Physicians do not censure their fellow practitioners for choosing a special branch of medicine and specializing in it, but what about the pharmacists?

ANTI-COMMERCIAL PROPAGANDA HARMFUL.

In talking with the representative of a large pharmaceutical concern who recently completed a tour of (26) states, during which he spoke at many pharmaceutical association meetings, I was impressed by his statement that the most significant result of his trip was the finding of a low morale among druggists, which he attributed to the frequent decrying of the spread of modern merchandising practices in pharmacy.

It seems time for pharmaceutical organizations, magazines and individuals to refrain from preaching against sound merchandising methods in drug stores, and to devote some efforts to a constructive program. Let them tell how to make better displays in windows and on counters, how to increase fountain sales, how to buy and how to sell, for these things are just as essential to the life of the average drug store as is that always popular subject, which professional pharmacists continually harp upon, "building up the prescription department."

That subject, of course, is always of great importance and should receive its share of attention at the hands of association officers, drug publications and indi-

viduals who attempt to speak or write constructive ideas for the retail druggist. The danger is that they will endeavor to convince their hearers or readers that there is nothing else worthy of attention. There *are other things*, and these other things make up 70 to 90 per cent of the volume of business of many drug stores to-day.

It is a fine spirit which prompts the professional brother to contribute his share of opinions, but, because they represent only his interest or side of the profession, there is no reason for his thinking "that's all there is—there isn't any more."

I have heard druggists stand up in meetings and preach against cut prices, and the next day have found their windows filled with proprietary medicines cut to the bone. I know of some "holier-than-thou" professional pharmacists who yell about the modern commercialized store handling proprietary medicines, while they themselves keep the same brands of medicines under cover. They try never to lose a sale on this line of merchandise, yet—they sail under the flag of professionalism.

COMMERCIAL VS. PROFESSIONAL PHARMACY.

"Commercialism" is a word which many speakers and writers on pharmaceutical subjects use in a derogatory fashion for the purpose of securing synthetic applause or praise. I know, because post mortems conducted on many speeches, intended to belittle the commercial pharmacists, have shown them to consist mainly of "bunk."

Let us analyze such a statement as this: "Pharmacy is a calling which may rise to the dignity of a true profession or sink to the level of low commercialism according to the ideals, the ability and the training of the one who practices it." What does that mean?

The inference is obvious enough. It is apparent that "rising to the dignity of a true profession" is intended to denote everything that is honorable, while the phrase "sinking to the level of low commercialism" is evidently meant to savor of everything that is undesirable.

Why does this line of demarcation continue to exist between the professional pharmacist on the one hand, and his brother who combines commercialism with his professionalism.

Possibly, it is due to a misunderstanding of the true meaning of the words commercial, professional, ethical and unethical. As a matter of fact, the *professional* pharmacist may be either ethical or unethical, and the same is true of the commercial pharmacist. It might be said that the only difference between the two lies in the fact that the commercial pharmacist actually exists while the professional pharmacist is almost *non est*. That is hardly a fair definition, however. My own conception of them, defined in terms of their respective fields, would be as follows:

1.—Professional pharmacy is the science of turning crude drugs, chemical compounds and other substances into *medicine*.

2.—Commercial pharmacy is the knack of turning crude drugs, chemical compounds and other substances into money.

To further differentiate between these two terms, it must be understood that the term *ethical pharmacy* is the practice of ethical procedure, whether it be in professional or commercial pharmacy.

The pharmacist to-day, who is forced by changing conditions to practice commercialism, is spoken of as a commercial man and the term is not understood by

half of the people using it, for they have been educated to believe that *professional* means *ethical* and *commercial* means *unethical.*

Let us try to realize that the modern commercial pharmacist, who may buy his pharmaceuticals to save time and expense, is no more unethical than the college professor who rides back and forth to college in an auto instead of a horse-drawn vehicle. Both are saving time and expense. Why not give equal recognition to the commercial and professional pharmacists instead of raising a cry against the commercial pharmacist because he sells a victrola record or a hair net? Do not many of the pharmacy colleges teach commercialism in their courses?

There have been countless words written in behalf of the professional pharmacist, but very few have been written on the "commercial pharmacist" excepting those intended to belittle him. It is time the commercial man is recognized for what he really is rather than for what the theorist would make him out to be. Let us hope that such recognition will be accorded after the real status of our commercial brother has been analyzed and understood.

COMMERCIAL AND PROFESSIONAL PHARMACISTS DISPENSE SAME DRUGS.

History records the facts that the professional pharmacists of centuries ago handled and dispensed such things as onions, figs, honey, catgut sutures, yeast and so forth from his prescription department, for the alleviation of sickness. It was profitable. Commercial druggists of to-day do the same thing. The difference lies in the trend of dispensing and not in the remedies, for to-day the onion goes into a sandwich instead of tincture or syrup of onion; the catgut is called a ukelele string instead of a suture; the fig is sold as a fruit laxative instead of being used as a poultice for ulcers; the yeast instead of being mixed with charcoal and elm, for the treatment of carbuncles, is eaten by the cake as a panacea; the vinegar instead of serving as a menstruum for the alkaloidal principles of blood root or lobelia, is used on salads in the luncheonette department. It will be noticed that the present-day druggist is selling many of the things dispensed by ancient apothecaries and, with his predecessor, is making a profit on them. The difference is that he sells to the hungry instead of to the sick. The old-timer turned drugs into medicines and the modern is turning drugs into money.

SIDE LINES IN PHARMACY.

1. Candy.

In the sixteenth century the druggists of Germany are reported to have issued a protest that the sugar vendors had taken their confection business away from them. Last year there was approximately $187,000,000 worth of confections manufactured and consumed. The druggists of to-day with their candy departments, made popular through the manufacturers' high-class merchandise and advertising, are not worrying about the sugar vendors.

2. Soda Fountains.

The ice cream business is said to have increased 240% in (16) years, and the commercial pharmacist has played a big part in bringing about that increase. The

fountain business to-day is said to represent 25% of the gross volume of many drug stores' sales. In more than a few stores, no doubt, it represents a great deal more.

3. Cosmetics.

Centuries ago the Queen of Sheba and Cleopatra were able to appear more beautiful than other women of the time because they had access to the choicest lotions for anointing their faces, arms and hair. Beauty secrets were known to but few, and cosmetics were costly. We are more fortunate to-day for the commercial pharmacists and others have enabled men, women and children to spend $390,000,000 in a year's time on cosmetics. This sum is more than twice the amount it took to build the Panama Canal.

Perhaps the only material benefit these millions of dollars wrought was rouged cheeks, wavy hair and shineless noses, but who can tell what happiness it brought to the users? Happiness usually is worth all it costs.

4. Soda Fountains and Luncheonettes.

Why raise such a cry over modern soda fountain luncheonettes? They have afforded the people a noonday repast which has eliminated the unhealthful old cooked dinners of yesterday's gourmands.

One may say that the soda fountain lunch is not professional, but no one need attempt to argue on the health element involved, for industry reports that the old heavy mid-day meal threw the worker into a more or less lethargic state for the afternoon. The new type of luncheon has made them better workers. The present day scarcity of adipose tissue on the fair sex may be partly attributed to the drug store luncheonette, for the reducing maidens partake of graham crackers and milk instead of ham and cabbage or a roast beef dinner. Even the men are satisfying their lunch hour hunger with a cup of coffee and a sandwich. All seem to be more healthy than in the older day.

The only derogatory statements one can make against the luncheonette is the fact that the commercial druggist by keeping his customer in better health, has hurt his sales of proprietary medicines (if that be a hurt), for their sale is reported to be on the decline in big cities, while still good in the country where people eat less temperately.

Fountain manufacturers are taking whole page spreads in magazines like the *Saturday Evening Post* at an expense of thousands of dollars weekly, to advise the people of the fact that a light luncheon at the soda fountain, rather than a heavy cooked dinner, is a correct noon-day meal.

It is interesting to know that there are over a thousand druggists in New York City to-day serving fountain and luncheonette lunches.

FEW COLLEGES RECOGNIZE PRESENT CONDITIONS.

In a farewell address at the Philadelphia College of Pharmacy and Science to the senior class, of which I was a member, one of the professors spoke to us something like this:

> You are about to embark on a professional career and may you be a credit to that profession, and for Heaven's sake, don't sell phonograph records or hair nets in your drug stores. Try to be the professional men you have been trained to be.

Well, what happened? We were turned out in a day that demanded these very things, and we were forced to sell them. I am thankful that this same college and others are big and broad enough to recognize this condition, and are going to teach the student of to-day the way to sell a phonograph record and a hair net.

It was my privilege to inspect the modern drug store which had been built within the new edifice of the Philadelphia College of Pharmacy and Science, in company with Dr. Herbert Hess, of the merchandising department of the Wharton School at the University of Pennsylvania. He is going to teach good merchandising to the future graduates of the Philadelphia College of Pharmacy and Science in that drug store. This means that they will be commercial men as well as professional men.

The present conflict between the professional and commercial men can best be settled by each of them studying and helping the other in their respective fields, and not by reviling each other, which is detrimental to the future welfare of pharmacy at large.

Surely it is better to teach our students how to spread a mustard plaster and make an effective window trim or effect a pleasant and profitable sale for the store they are employed in, than just to teach them how to spread a mustard plaster.

Of course, students must always be taught the professional side, for without that they would fail on the commercial side. Dean Muldoon, of Duquesne University College of Pharmacy, has pointed out how foolish it would be to ask pharmacists to spread their own mustard plasters to-day. After graduation, when they go into business and need mustard plasters, they just wire the manufacturer of mustard plasters, if need be, and their order is rushed, by air mail, within a few hours.

Every profession has undergone the same changes that pharmacy has, but we are slow to realize or recognize the fact, and so are inclined to keep on blaming somebody for the changes in our profession, whether he is guilty or not. Maybe the professional's reluctance to consider the commercial side should come in for a part of the blame.

I reiterate that a druggist must first be a good professional man before he can be a good commercial man. There is room for both and still more room for greater tolerance and understanding between the two.

AGAR-AGAR, JAPAN—PRODUCTION AND FOREIGN TRADE.

Agar-agar is produced during the winter months by farmers in the mountainous region near Kobe. These manufacturers operate on a very small scale and have such limited means that they would be unable to engage in the exportation of their products even if they possessed a sufficient knowledge of English and of export procedure to permit direct transactions. Consequently, the export trade in this line is in the hands of brokers and exporters in Kobe and Osaka. These houses assemble shipments (the agar-agar arriving in Kobe in a loose condition), inspect the quality, pack the shipments for export, and perform the intricate documentary work necessary to clear the shipments through the banks and the customs. They operate on commission basis or, if desired, quote firm prices c. i. f. American ports. They usually require confirmed irrevocable letters of credit with orders, against which drafts are drawn at 60, 90 or 120 days sight.

Exports of agar-agar from Japan through the port of Kobe to the United States for 1926 and 1927 were 364,000 pounds, value $235,000 and 342,000 pounds with a value of $228,000, respectively. (Consul E. R. Dickover, Kobe.) An illustrated article on "Methods of Manufacturing Agar-Agar in Japan" was published in "Commerce Reports," Oct. 10, 1927.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor also will undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

THE LOST PROFITS FROM LOST CHARGE SLIPS.

Whenever a group of druggists begin a discussion of charge business in retail stores, the first thing that usually comes to mind is the losses from bad debts. As druggists know, who have developed a large volume of charge business, the actual losses from uncollectible accounts are remarkably small—in many cases amounting to only a fraction of a cent on a dollar of sales and scarcely ever, in any well-conducted business, exceed one cent on the dollar of sales.

A source of loss in the conduct of a charge business in a retail drug store, which is likely to be much more important yet nowhere near as apparent, is the losses from charge sales which for one reason or another are not posted to the customer's account. A frequent cause of this is the loss of the original charge slip or record.

With competition as it is to-day, the profits in even the best managed stores, will scarcely exceed five to ten cents on a dollar of sales. If a dollar's charge sales are not billed it is evident that ten to twenty dollars additional sales must be made in order to make up the loss of profits resulting from a failure to post one dollar's charge business.

The problem of recording properly the charge sales in a retail drug store is quite different from that in a department store or other large retail establishment. Charge sales are made in a drug store in a much more informal and therefore less regular way than in large retail establishments. In a drug store there is, of course, no phoning to a credit authorization department, no copying of the customer's name and address on a triplicate or quadruplicate form, as is the requirement when even the smallest charge sale is made in a department store.

In fact, it would be quite hopeless to attempt to put a drug store's charge business on such a basis. The time required to make out such complicated forms would slow up service and increase the cost of doing business. Nevertheless, when a customer, who is as well known to a drug store salesman as his own brother, makes a charge purchase, this very situation is apt to breed carelessness and consequent losses. There may be another customer waiting; the sales person will serve him before making a notation of the first charge purchase, and by that time he may have forgotten entirely about the other sale.

One plan which is frequently employed to overcome this situation is to place

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charge slips at every cash register or wrapping space and also at each telephone over which orders are received. Since it is customary to go to the cash register or the wrapping counter after practically any purchase, it is obvious that if blank charge slips are on hand there, there is less likelihood of forgetting to make a notation of a charge sale. It is particularly important not to overlook the soda fountain cash register in distributing pads of blank charge slips, especially in this day of widespread luncheonette service and consequent high checks.

While this plan will reduce somewhat the losses from a failure to record charge sales, it is by no means in itself an assurance that there will be no overlooked charge sales. If the charge slip is misplaced after it has been made out, a loss is bound to occur. One safeguard is to imprint the charge slip on the cash register imprinting device. A nightly check of the cash register tape will show then if any slips are missing and their total amounts. In a small store it is frequently possible from this evidence to recall the items included on the missing slip and by whom they were purchased.

In some stores the practice is to use the receipt printing device on the cash register itself to provide the charge slip. While the total amount can be printed by the cash register on such a slip it is necessary for the sales person to detail the purchases if more than one item is bought at one time and, of course, to write the name and, perhaps, the address of the person who makes the purchase.

In some stores, small stores particularly, the practice is to record charge purchases in a day book which is kept at the cash register. As I said before, unless a day book is kept at each cash register and wrapping counter, charge sales are apt to be overlooked if a convenient means of recording them is not at hand at the time the sale is made. If the day-book method is used, it is evident that several books must be kept in constant use. Another difficulty is that it is much more work to post to customers' monthly statements from a day book rather than charge slips, because the slips can be alphabetized and all of a particular customer's purchases posted at one time.

The plan has been tried of serially numbering charge slips. It is thus possible by placing them in numerical order to find out if any slips are missing. This is the only fact that can be learned, however. The total amounts of the missing sales and the items composing them and the name of the purchaser must be recalled from memory. Furthermore, if the fundamental idea, which I have explained about distributing blank charge slips in all parts of the store where sales are made, is followed, it is evident that a continuous series of numbers will not be produced by any one day's business, thus increasing the difficulty of detecting whether or not any slips are missing.

If every effort is made to record, even in the briefest form, the details of a charge sale at the time the sale is made, losses from this source can be kept at a minimum. For instance, a customer may telephone to have a prescription renewed. Naturally, she will give the number of the prescription. If a charge slip is made out right then, it insures the recording of the transaction; later when the file has been consulted and the prescription compounded the proper amount can be inserted on the charge slip. This is true also of many kinds of merchandise ordered over the telephone, and even in person, for which the sales person may not be able to recall offhand the correct price.

Once the slip is made out and imprinted on the cash register the safest thing to do to keep it from being lost is to treat it just as if it were cash which, in fact, it is. I never knew a drug store where the cash is left lying around at odd places in the store, but it is a fact, as observing druggists know, that records of charge sales, many times, are not treated with similar care. Cash taken in is put in the cash register during the day and at night is transferred to the safe. Similar handling and care of charge slips will reduce losses greatly.

It has been advocated sometimes that a triplicate or, at least, a duplicate sales book should be used by the sales person for recording charge business. As in the case of large stores, the original is given to the customer and the second and third copies are retained by the store. The second copy is detached and put in the cash register, to be posted later to the customer's account. The third copy is bound in the sales book and remains there as an exact record of the transaction in case the second copy is lost. The charge slips in the sales book are serially numbered, of course. After the second copies have been posted they are arranged in numerical order and compared with the third copies to see that none is missing. The big disadvantage is the time required to fill in duplicate and triplicate sales slips.

The experience of most druggists has been that the original copy to the customer is unnecessary. Therefore, two copies in the ordinary drug store will suffice. This is a useful plan if experience has found that, in spite of all care, charge slips are bound to disappear with resulting losses of profits earned. Generally, it will be found, however, that if charge slips are handled and treated with the same care as cash money, there will be virtually no disappearances which cannot be traced and recovered.

THE NATURE OF PEPSIN.

An editorial in a recent issue of the *Journal of the American Medical Association* discusses the nature of pepsin, stating that "for years the question of the chemical nature and physical properties of enzymes has been vigorously debated. They have not been isolated in a state of purity and at best it has been possible to describe them as 'non-diffusible colloid particles.' Some writers quote Willstätter's suggestion that 'a molecule of an enzyme consists of a colloidal carrier and a purely active group.' It is even possible, Bodansky adds, that enzymatic activity is not due to any single molecule but rather to several relatively simple chemical compounds constituting a system.[1] Such discussions are at best confessions of ignorance. Most of the efforts to 'purify' enzymes have resulted in the separation of products bearing the characteristics of proteins. This has been conspicuously true of the amylolytic group. It appears that the higher the degree of purification of the amylases, the more nearly do they approach the proteins in composition and properties. Not long ago Fenger and Andrew[2] showed that pepsin of high proteolytic power can be obtained by isoelectric precipitation. At p_H 2.5, products showing a proteolytic potency of 1:65,000 were secured. The analyses of these unique samples by Fenger, Andrew and Ralston[3] of Chicago are characteristic of a protein. All fractions still possess proteolytic properties until they reach the stage when they are sufficiently small to diffuse through parchment or animal membranes. The gradual decrease of proteolytic activity of the enzyme itself is paralleled by loss of its complex protein characteristics. There is no reason at present to modify the belief that the problem of the chemical composition of pepsin is in part at least one of protein structure."

[1] M. Bodansky, "Introduction to Physiological Chemistry," John Wiley & Sons, New York, 1927.

[2] F. Fenger, and R. H. Andrew, On the Isoelectric Precipitation of Pepsin, *J. Biol. Chem.*, 73 (June 1927), 371.

[3] F. Fenger, R. H. Andrew and A. W. Ralston: On the Isoelectric Precipitation of Pepsin, II, *J. Biol. Chem.*, 80 (Nov. 1928), 187.

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

H. M. Lerou, President, Norwich, Conn. J. W. Gayle, Treasurer, Frankfort, Ky. M. N. Ford, Chairman of Executive Committee, Columbus, Ohio. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

ACTIVE MEMBER STATES.

Alabama	Indiana	Montana	Rhode Island
Alaska	Iowa	Nebraska	South Carolina
Arizona	Kansas	Nevada	South Dakota
Arkansas	Kentucky	New Hampshire	Tennessee
Colorado	Louisiana	New Jersey	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming

A STUDY OF PHARMACY.

A comprehensive study of pharmacy in all its phases, including pharmaceutical education, is now assured as a result of the recent meeting of the Joint Committee held in Atlantic City January 30th and 31st. The American Council on Education, Washington, D. C., is coöperating in the study to which the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION have pledged support.

Thus the action of the National Association Boards of Pharmacy, in St. Louis, authorizing its Executive Committee to map out a plan for a survey of the colleges of pharmacy, has grown into a project which will undoubtedly put pharmacy in its rightful place in guarding public health and welfare and give it the professional status which such a service deserves. The study will concern itself with the conditions surrounding the practice of pharmacy; a survey of pharmaceutical education; the functions of boards of pharmacy; objective measurements of achievement and standards for pharmaceutical education.

The following representatives are serving on the Committee: For the National Association Boards of Pharmacy—L. L. Walton, A. C. Taylor, H. C. Christensen; for the American Association Colleges of Pharmacy—C. B. Jordan, E. H. Kraus, Charles H. LaWall; for the AMERICAN PHARMACEUTICAL ASSOCIATION—H. A. B. Dunning, E. F. Kelly, W. W. Horne; for the Syllabus Committee—John G. Beard. Mr. Walton was elected Chairman and Mr. Beard, Secretary.

Dr. C. R. Mann, Director, and Dr. David A. Robertson, Assistant Director, of the American Council on Education; Dr. W. W. Charters, Director of Education, Ohio State University; Dr. Samuel E. Zook, President of the University of Akron, Ohio, and Dr. Samuel P. Capen, Chancellor of the University of Buffalo, attended the meeting, as advisers.

A detailed report will be published later.—H. C. C.

OBITUARY.

David W. Ramsaur, former Secretary of the Florida Board of Pharmacy, died at Palatka, Fla., on January 19, 1929. He was general manager of the Groover-Stewart Drug Company, of Jacksonville and one of the organizers of the Florida State Pharmaceutical Association. His passing will be mourned by his many friends throughout the state and the country. He was fifty years of age and a native Floridian. Funeral was held from the Riverside Presbyterian Church, Jacksonville, January 20th.

DISTRICT NEWS.

A joint meeting of the board and the faculty members of District 6, comprised of Texas, Oklahoma, Kansas, Arkansas, Missouri and Louisiana was held in San Antonio on January 17th and 18th.

Lloyd N. Richardson, Vice-President and Chairman of District 2 (New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia) announces a joint meeting of the boards and the colleges at the Chelsea Hotel, Atlantic City, N. J., on March 11 and 12, 1929. An interesting program is being planned.

John A. J. Funk, Vice-President and Chairman of District 3 (Ohio, Kentucky, Indiana, Illinois, Michigan and Wisconsin) announces that preparations are being made to hold a meeting in Detroit, Michigan, the latter part of April. Further details will be given next month.

LEGISLATION.

A complete revision of the N. A. B. P. model law propositions with explanatory comments has been mimeographed and is now ready for distribution. As legislatures are meeting in forty-three states this winter, many changes in pharmacy laws will undoubtedly be proposed. In the interest of keeping our laws as uniform as possible, it is suggested that secretaries, board members and legislative committee members write the N. A. B. P. secretary's office for copies of the model law for comparison. Each section is complete in itself and can be lifted out of the law, for example, store registration, drug store designation, etc. *Section 7*, pertaining to the college prerequisite and reciprocity, is being presented to the legislatures of at least four of the fifteen states as yet without the college of pharmacy requirement.

PHARMACY CORPS IN U. S. ARMY.

Every N. A. B. P. member is urged to write to his Congressman and Senator urging a vote for the Pharmacy Corps Bill. This bill will give to the men in the Service the protection which civilians now have under state pharmacy laws. At present, many large military hospitals are being run without a trained pharmacist in charge. The Bill in the House is known as H. R. 16278, introduced by Con-

gressman Kelly on January 15, 1929; in the Senate, as S. 5406 introduced by Senator Copeland on January 17, 1929. Here is a chance for helping the boys in service and doing something for pharmacy at the same time.

PERSONALS.

A. L. I. Winne, Secretary of the Virginia Board of Pharmacy, has been elected first Vice-President of the AMERICAN PHARMACEUTICAL ASSOCIATION. The N. A. B. P. is proud of this honor bestowed on one of its most active members. Nor has Mr. Winne confined his activity to any one branch of pharmacy. He was the first president of the national organization of state pharmaceutical association secretaries formed in 1927, for the exchange of helpful ideas and useful information. As Chairman of the Committee on the Pharmacy Corps Bill now pending in Congress, he is doing excellent work.

The druggists of Arkansas County, Arkansas, recently met and organized a druggists' association, of which **Booker Latimer,** of DeWitt, President of the Arkansas Board of Pharmacy, was made President. Every store in the county agreed to do business only on a cash basis after January 1st.

Joe Demain, President of the Kansas Board of Pharmacy, who is retiring from the board in accordance with the established precedent, entertained the members of the board and others prominent in pharmacy at a dinner given in Macksville, Kans. on February 7th.

Herbert W. Parker, Secretary of the Arkansas Board, recently entertained the Craighead County Medical Society with a banquet at the Hotel Noble, Jonesboro. There were speeches by the Mayor of Jonesboro, by President Latimer of the Arkansas Board; entertainment from Memphis, and a wonderful dinner—fresh strawberry short cake and everything.

STATE BOARD NEWS.

Alabama.—Five confectionery and drug store proprietors in Birmingham were prosecuted and fined $50 and costs for selling drugs and poisons without the supervision of a licensed pharmacist. Dr. N. Robertson, supervisor of the division of agricultural chemistry at the State Department of Agriculture, has issued a caution to drug and sundry stores against violation of the Alabama pharmacy law. Enforcement of the law was placed in this department about six months ago.

Reciprocal registration was granted recently to Sister M. Lucy Ann, of Connecticut; William C. Kuhn, of South Carolina and Frank S. Twitty, of Georgia.

Arizona.—An amendment to the pharmacy law will be introduced in the legislature forbidding the sale of all drugs and poisons, except patent medicines, except under the supervision of a registered licentiate.

The next meeting of the Board will be held April 10 and 11, 1929.

Connecticut.—An examination for registered and assistant pharmacist was held January 3rd and 4th—40 appearing for the former and 20 for the latter grade of certificate. Grading results were not available at the time this goes to press, but will be published next month.

District of Columbia.—The following were registered by reciprocity during January: Alexander Sosnovsky and Harry L. Hoffman, of New Jersey; James H. Adams and William H. Gross, of Pennsylvania; Albert B. Radman, A. Benford Topping and James A. Jones, of Virginia; J. C. Mueller, of Wisconsin.

Florida.—John K. Clemmer of Miami has been appointed by Governor Martin to succeed W. D. Jones, who recently resigned as a member of the Board of Pharmacy.

The Board held its midwinter meeting in Orlando on January 14th and 15th. Seventeen candidates passed the examination and twenty-six were registered by reciprocity.

Reciprocal registration was granted to the following: Porter B. Childs, Chas. C. Hatcher and Frank L. Atkinson, of Alabama; Grady Dean Watford, Mrs. G. D. Watford, Alvin A. Harper, Alvin L. Rowland, John Bolton, H. L. Corlew, A. F. Elheredge and James A. Anderson, all of Georgia; Harry F. Isted, of Illinois; Chester B. Wood, of Massachusetts; Leander S. Bennett, of New Jersey; Edwin G. Weltner and J. Ralph Grube, of Pennsylvania; Austin P. Casey, of Rhode Island; and Walter R. Campbell, of South Carolina.

Idaho.—The following have been appointed members of the Pharmacy Examining Board for a term of two years: J. P. Halliwell, of Pocatello; H. M. Cummins, of Melba; Loyd Harris, of Lewiston.

An examination was held on January 15th. Eight of the ten candidates taking the examination were successful in passing.

Merle J. S. Lake, of Kentucky, and Leland R. Rohner, of Oregon, were granted reciprocal registration.

Indiana.—Solomon J. Cowin and James N. Kelley, both of Illinois, were registered by reciprocity during January.

Kansas.—At the regular quarterly examination held at Lawrence, November 14 and 15, 1928, seventeen out of sixty-five applicants for full registration were successful. Fourteen out of the thirty-nine taking the assistant examination also passed.

Reciprocal registration was recently granted to Jos. S. Parsons, of West Virginia; E. W. Speedling, of Iowa; E. E. Holmes, of Missouri.

Minnesota.—Ten of the thirty-four candidates taking the January examination for pharmacist were successful in passing. Six out of twenty-three taking the assistant examination also passed.

The following were registered by reciprocity: George J. Holicky and John B. Thompson, both of North Dakota; George S. Lewis, of Illinois.

At the executive session of the Board held January 19th, J. P. Jelinek, of St. Paul was elected president for the ensuing year and John W. Dargavel of Minneapolis was reëlected secretary.

Montana.—The office of the secretary, J. A. Riedel, has been moved from Billings to Boulder.

The Board meets regularly in April, July and October for examinations.

New Hampshire.—Reciprocal registration was granted to Arthur X. Forrest and Thomas F. Mallan, both of Massachusetts.

New Jersey.—John A. Frank, Jr. and Meyer J. Shoewarger, both of Pennsylvania, were registered by reciprocity during January.

New Mexico.—Fourteen candidates passed the October examination given in Santa Fe. Report does not show total number taking examination.

Reciprocal registration has been granted recently to the following: Willis E. Andrews, of Colorado; Bessie L. Davis, of Oklahoma; Herbert Ward and Elbert L. Muncy, of Texas; and Hugh I. Osborn, of Wyoming.

New York.—George W. Mather, secretary of the New York Board of Pharmacy, recently gave out the information that the Board will continue to enforce the ownership law of that state. He points out that the New York statute reads differently from the Pennsylvania law recently held unconstitutional by the U. S. Supreme Court.

North Carolina.—Verner F. Smith, of Missouri was recently granted reciprocal registration.

Ohio.—The results of the January examination show twenty-seven out of fifty-three candidates taking the pharmacists' examination as successful. Six of the eight taking the assistant examination also passed. The highest grade obtained in the pharmacists' examination was 92.6 per cent, made by Emil F. Molfenter, of Cincinnati.

Reciprocal registration was granted to Omar H. Whittington, on Arkansas license; Edward A. Miles, on Pennsylvania license; William B. Jones, on Indiana license; Frederick L. Yendell, on District of Columbia certificate.

The next examination will be held in Columbus on April 2 and 3, 1929.

South Dakota.—F. L. Vilas, of Pierre, has been appointed a member of the Board of Pharmacy to succeed L. E. Highley who was recently elected to the South Dakota Senate.

A new poison law is being prepared for the present session of the legislature. South Dakota has two senators and three representatives in the legislature that are active pharmacists.

The next Board meeting will be held at Brookings, South Dakota, on May 27th, 28th, 29th.

Plans are being made by the state pharmaceutical association for entertaining the delegates to the AMERICAN PHARMACEUTICAL ASSOCIATION convention to be held at Rapid City, August 26th to 30th.

Tennessee.—Reciprocal registration was granted to Wylie T. Nash, of Arkansas, during January.

Texas.—The following were recently registered by reciprocity: Jack M. Simpson, of Arkansas; Harry E. Day, of Kansas; Arthur Z. Storch, of Maryland; William Mlinar, of Minnesota; Ray Reed and Carl L. Estep, of Oklahoma; and Frederick C. Kradwell, of Wisconsin.

Vermont.—Raymond A. Dyer, of New Hampshire, was registered by reciprocity in January.

Virginia.—The next Board meeting will be held some time in April.

The term of H. C. Littlejohn, of Leesburg, expires on March 1, 1929. A list of nominees, including the name of Mr. Littlejohn, was sent to the Governor on January 15th but as yet no word of appointment has been received.

Washington.—Reciprocal registration was extended during January to the following: Winfield C. Noyes, of Arizona; R. C. Livingston, of Colorado; E. A. Holmes and Dorsey D. Wright, of Missouri; F. J. Perusse and J. D. Krataville, of Nebraska; C. L. Shelton, of New Mexico; George C. Couch, of North Dakota; Harold S. Ingle, Earl C. Pearson, Edward A. Lahti and S. Miller, all of Oregon.

Wisconsin.—R. A. Mickelsen, of Minnesota, and E. N. Rulien, of Illinois, were registered by reciprocity during January.

SPANISH DEFINITION OF CASTILE SOAP.

A further Royal Order, published in the *Gaceta de Madrid* for December 14th, provides (1) That the description of Castile Soap (Jabon Castilla) may be applied only to the product of saponification of good quality olive oil with the necessary caustic soda, which has the following characteristics: No fats other than good quality olive oil may be used in its manufacture; it must not contain more than 2 per cent of chlorides expressed in sodium chloride; the maximum water content is 25 per cent, and the maximum free alkali content may be not more than 0.3 Gm. per cent; when decomposed by mineral acids the fats extracted must show an iodine index figure (Hübl method) between 69 and 82; the oleo-refractometric degree of these acids must be between 41 and 43 at 40°; the soap must be white, smooth to the touch, of a pleasant odor and slightly alkaline in taste, and must be soluble in water or alcohol without leaving any residue. (2) That the term "Jabon Castilla," in addition to referring to a special class of soap known as being purely of Spanish manufacture, implies that the product proceeds from that country, and it may not be adopted by any manufacturer as a private mark, nor may it be used by non-Spanish producers, under the legal provisions relating to industrial and commercial property.—Through *Pharm. Jour. and Pharm.*, Feb. 18, 1928.

First Aid Week Begins March 17th.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

The following paper on "A Contract System for Pharmaceutical Instruction," by Professor Cook, was presented at the Teachers' Conference on Pharmacy at the last meeting of the American Association of Colleges of Pharmacy in Portland, Maine. This material is of particular interest to teachers of pharmacy and I trust that the pharmacy staffs of the membership colleges will give it close attention.

C. B. JORDAN, *Editor.*

A CONTRACT SYSTEM FOR PHARMACEUTICAL INSTRUCTION.

BY E. FULLERTON COOK.*

There are many plans in education but, after all, the purpose of all teaching is to develop an interest in the subject and intelligent thinking on the part of the student. As a rule the greater the effort a student can be induced to make, through his own initiative, the more thorough the training.

In one of the Eastern Colleges, where students of special ability have been given the privilege of carrying their educational program without systematic class-room instruction, but through their own initiative accompanied by suitable advice, those in charge under these circumstances have frequently observed that the student who had not been in the class room passes better examinations than those who have taken the regular lectures and reviews.

If students are mentally qualified and morally capable of assuming responsibility, the plan of individual development, under appropriate guidance, is highly recommended, as the attitude of mind is quite altered through the sense of responsibility assumed. The mental attitude is usually receptive, but much like the holding of an empty pitcher to the fountain to be filled, the student not seeing a necessity for effort on his own part. The secret seems to be in some way to emphasize individual interest and effort and the plan to which your attention is called has been established with that in view. It is true that the motive which often animates the student, that is, better grades, is not ideal, but even then the result is beneficial.

CONTRACT METHOD.

The first step is the presentation, at the preceding period, of a definite outline of study covering the laboratory subject for the following week.

This has been for convenience termed "A Contract" and has, therefore, an element of obligation. The acceptance of the outline implies its fulfilment.

Every lesson should be covered with such a contract in which there is pointed out definite study in text and reference books.

The outline of the contract quite fully covers the work for the next lesson so that the student enters the laboratory with a clear understanding of the day's

* Philadelphia College of Pharmacy and Science.

work; not only from the standpoint of the formulas to be covered, but with reference to its history, chemistry, therapeutic activity and other phases.

Furthermore, as a check upon the satisfactory completion of the contract the first fifteen minutes of the period is devoted to the writing of answers to questions upon the subjects previously assigned. This has been called "A Work Sheet," and is only given to students who have completed the contract. It is specifically understood, as a feature of this work, that there will be one or more rather obscure questions included for the purpose of checking the thoroughness of the study.

At the close of the fifteen minutes the work sheets are collected, the necessary additional instruction given, and the students proceed with the laboratory work.

An additional feature, which has been found of great value in the application of this method, has been the rating of the work sheet during the laboratory period by one of the instructors and at the desk of the student. In this case the grade is entered immediately upon the record and the work sheet is handed back for the students' file.

This final feature greatly stimulates the effort on the part of the student and at the same time enables the instructor to point out mistakes.

It has been the experience of this year, where the contract method has been tried in the three classes, that the student has greatly increased his reading and study on laboratory subjects and has obtained a far broader knowledge of the subject than was ever thought possible.

For the purpose of illustrating this method several contracts and work sheets are presented.

PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE.

SECOND-YEAR OPERATIVE PHARMACY.

Contract X.—(Note to student. In accepting this contract you assume the obligation of fulfilling its provisions.)

1. Always have your Pharmacopœia and your Practice of Pharmacy at the Laboratory period.
2. Before coming to the Laboratory next week read the article on "Soaps" ("P. of P.," pages 1049 to 1054).
3. Know the difference chemically, in physical form and in reaction between the official "Soap" and "Soft Soap" ("P. of P.," pages 1054 to 1056). Know the specific advantages and uses of Soft Soap.
4. Know the impurities that are guarded against by the U. S. P. tests under "Soap."
5. Know all about Cresol and its relations to Cresote ("P. of P.," pages 806 and 813).
6. Know how to make Compound Solution of Cresol, U. S. P. Comp. Sol. of Crude Cresol, and "Sheep Dip" ("P. of P.," pages 814 to 816).

SECOND-YEAR OPERATIVE PHARMACY—SECTION I.

WORK SHEET FOR CONTRACT X.

Have you completed the required study under Contract X? .... If so, answer the following:

1. What is the usual composition of "Insoluble Soaps?"
2. Name two official "Soluble Soaps."
3. Illustrate by a reaction the manufacture of a soap.
4. How is a "Floating Soap" produced?
5. How much water is permitted in "Olive Oil Castile Soap," U. S. P., and how is it estimated?

6. Why is "Soft Soap" used in the preparation of Compound Solution of Cresol?

Prepare to-day:

50 Gm. of Soft Soap, U. S. P., page 1055.
50 Gm. of Comp. Sol. of Cresol, page 814.
25 cc. of Comp. Sol. of Crude Cresol, page 815

Desk No..... Name.....

SECOND-YEAR OPERATIVE PHARMACY.

Contract XII.—(Note to students. In accepting this contract you assume the obligation of fulfilling its provisions.)

Bring your Practice of Pharmacy to the next Laboratory period.

First Week on Emulsions.

1. Learn all you can find out about the theory of emulsification (see "P. of P.," pages 1655 to 1657; "Scoville," page 116; "Arny," page 251; "Caspari," page 286).
2. Study the "English Method" and be prepared to apply it in the laboratory ("P. of P.," page 1657).
3. Study the emulsions official in both the U. S. P. and N. F. ("P. of P.," pages 287 to 296).

Second Week on Emulsions.

1. Study the "Continental Method," and be prepared to apply it in the laboratory ("P. of P.," page 1658, etc.).
2. Study the various types of Emulsion machines available and know the application and conditions under which each may best be used ("P. of P.," page 1658, etc.).
3. Know the various available emulsifying agents and when they may best be used ("P. of P.," page 1660, etc.).
4. Know how to make "Lafayette Mixture" ("P. of P.," page 293).

Third Week on Emulsions.

1. Know a variety of suitable flavors for emulsions ("P. of P.," page 287).
2. Know how to preserve emulsions from fermentation ("P. of P.," page 1661).
3. Know how to make Emulsion of Benzyl Benzoate ("P. of P.," page 837).
4. Know how to make Agar Emulsion of Petrolatum ("P. of P.," page 1058).
5. What is an "Emulsoid" ("P. of P.," page 186).
6. Learn how to make "Emulsion of Silver Iodide."

SECOND-YEAR OPERATIVE PHARMACY—SECTIONS I AND II.

WORK SHEET FOR CONTRACT XII.

Have you completed the required study for Contract XII? .... If so answer the following:

What is meant by the following terms as applied to Emulsions?

1. Dispersed phase.
2. Dispersion medium.
3. Continuous phase.
4. Internal phase.
5. External phase.
6. What is meant by an "oil-in-water Emulsion?" Give an official example.
7. What is meant by a "water-in-oil Emulsion?" Give an official example.
8. Describe the exact procedure to be followed in making a 40% Cod-Liver Oil Emulsion by the "English Method."
9. Write a formula for 50 cc. of such an emulsion.
10. Why are emulsions employed in medicine?

Prepare to-day:

1. 50 cc. of a 50% Emulsion of Cod-Liver Oil by the "English Method."
2. 50 cc. of a 25% Castor Oil Emulsion using the "English Method."
3. 50 cc. of a 40% Cod-Liver Oil Emulsion, using Glycerite of Egg Yolk to emulsify.

Desk No..... Name.....

PRESCRIPTIONS INVOLVING SIMPLE SOLUTIONS AND EYE SOLUTIONS.

Note: These four prescriptions are to be copied on ℞ blanks and then filled in the Dispensing Laboratory. The Prescription Filling *Rules* must be strictly followed and each prescription labeled, priced, checked and finally wrapped for delivery.

56707

℞ for W. C. Potter

Sod. Bicarb.	ʒi
Tr. Gent. Comp.	fʒvi
Aqua. *q.s.*	fʒii

Sig. fʒi before meals. Sloan.

56708

℞ for L. C. Merrick

Sod. Chlor.	0.5
Sat. Sol. Acid. Bor.	25
Sassaf. Med.	1
Aq. Camph.	
Aq. Dest. *aa. q.s. ad.*	60

M. ft. collyr.

Sig. Use as eye wash. Dalton.

56709

℞ for W. J. Knowlton

Liq. Pot. Cit.	fʒii
Ammon. Chlor.	gr. viii
Syr. Scill.	fʒiv
Syr. Prun. Virg.	fʒi
Aq. Dest. *q.s. ad.*	fʒii

M. ft. sol.

Sig. fʒ in water every three hours. Little.

56710

℞ for John F. Hunter

Pot. Iod. (Sat. Sol.)	fʒiv

Sig. Ten drops in H_2O *t.i.d.p.c.* Wilson.

Prescription Contract II.

This assignment is to be carefully studied and questions will be asked next week, with answers in writing.

General assignments are for all students, others are indicated by the numbers 1, 2, 3, 4, indicating the corresponding number on the shelf at your laboratory desk.

General assignment.—Study "P. of P.," pages 1651 to 1654.

Group 1 and 4 assignment.—Study "Scoville, The Art of Compounding," pages 42 to 54.

Group 2 assignment.—Study "Caspari, Treatise on Pharmacy," pages 608 to 621.

Group 3 assignment.—Study "Arny, Principles of Pharmacy," pages 943 to 945 and 950 to 960.

THIRD-YEAR DISPENSING—WORK SHEET FOLLOWING.

PRESCRIPTION CONTRACT II.

Have you read the assignment given you under Contract II? .... If you have read it answer the following questions:

1. (For all.) Should the following prescriptions be filtered?

℞ Magnesiæ Pond	ʒiss	℞ Potassii Chlorat.	ʒiv
Mass. Hydrarg.	ʒss	Phenolis	gtt.xv
Sacch. Alb.	ʒi	Infus. Saliviæ	fʒvi
Sp. Ammon. Arom.	fʒii	*Misce.*	
Aq. Menth. Pip.	fʒii	*Sig.* Use as a gargle.	
Liq. Calc. Hydrox.	fʒiii	Explain reason for your conclusion.	

Sig. A tablespoonful every two hours.

2. (For all.) What is the rule to be followed when an alteration in the order of mixing the ingredients of a prescription changes its appearance?

3. (For Groups 1 and 4 only.) How could you prevent the precipitation?

   (*a*) Iron salts in neutral solutions.

   (*b*) An insoluble zinc or bismuth salt.

4. (For Groups 2 and 3 only.) Write a model prescription, labeling the several component parts.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

BALTIMORE.

The members of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION were the guests of Messrs. Sharp & Dohme, Baltimore, Md., on Wednesday evening, January 16, 1929. The program was planned and executed by members of the staff of Sharp & Dohme, who also conducted the guests through the Research Laboratories.

Dr. J. C. Munch, Director of Pharmacological Research, was the speaker of the evening, and had as his subject

CURRENT DEVELOPMENTS IN PHARMACOLOGY.

In presenting his address Dr. Munch mentioned that pharmacology is concerned with the action of drugs upon animals and, accordingly, all developments in chemistry, physics, physiology and pharmacy have direct relationships to pharmacology. He stated that several thousand papers dealing with pharmacology were published during 1928. In his address Dr. Munch presented the current developments of most specific pharmaceutical importance.

He stated that the adoption of bio-assays in U. S. P. X as official requirements has initiated a great deal of coöperative research by various pharmaceutical organizations. The one-hour frog method for the assay of digitalis has been found to have a probable error of 10 per cent. Studies have been started upon the relative accuracy of the other methods for the assay of digitalis. The effect of hydrogen ion, various types of light, various storage conditions and other factors which are believed to influence the rate of deterioration of tincture of digitalis have been considered in planning research work. The chemical similarity of many cardio-tonic glucosides has been pointed out by Jacobs.

Dr. Munch stated that in connection with the quality of certain imports of crude drugs, the question has arisen whether a tincture, fluidextract or other galenical, manufactured by the U. S. P. or N. F. process, using twice as much of a drug which is one-half the potency of the official drug will give a finished product which conforms with the analytical requirements and has the same clinical value as a product made from full strength crude drug which is in compliance with the official requirements for physiological potency. This question is now receiving a great deal of attention.

Further, Dr. Munch stated that posterior pituitary extract has been resolved into two fractions: (1) "oxytocin" which is 150 to 200 times as active upon the isolated guinea-pig uterus as the official U. S. P. X standard posterior pituitary powder; (2) "vasopressin" which is $62\frac{1}{2}$ to 80 times as effective in increase of blood pressure as the official U. S. P. X standard powder. Clinical results with these fractions have been encouraging. Laboratory and clinical studies have been continued upon corpus luteum, anterior pituitary, insulin and its substitutes, suprarenal cortex and other endocrine glands. Most noteworthy developments have been made in obtaining liver extracts which are clinically valuable in the treatment of essential hypertension and also of pernicious anemia.

He also stated that in the study of vitamines it has been shown that vitamine "B" is in reality a mixture of at least 2 vitamines and possibly of three. One of these is vitamine "F" which is considered to be the anti-neuritic vitamine; vitamine "G" is apparently identical with the pellagra-preventive vitamine "PP." It has also been shown that the administration of 0.1 mg. of irradiated ergosterol is adequate to supply the human daily need for vitamine "D" in the treatment of rickets and in the prevention of dental caries. It has been found that a great excess of vitamine "D" may produce injury and studies are now being directed to learn whether the ingestion of excessive amounts of other vitamines will produce harm. A great deal of attention has been directed to the development of a chemical assay for vitamine "A" with somewhat promising results. The chemical assay of the other vitamines has not given satisfactory results to date.

Dr. Munch stated that ethyl esters of chaulmoogra oil have produced clinical remission of leprosy symptoms. A number of new arsenic and antimony compounds have been made for the treatment of syphilis, sleeping sickness and other trypanosome infections. The development of a high bactericidal action in the blood serum against hemolytic streptococci and pneumococci by arsphenamine, neoarsphenamine and sulph-arsphenamine has been studied by Colebrook. The treatment of varicose veins by the injection of sodium chloride, sodium salicylate and other chemicals has given promising results in some 53,000 cases. Sodium nitrite has been reported efficacious in seasickness. Several drugs have been recommended as respiratory stimulants, but further work has shown that they are too harmful for general usage. Approximately 11,000 measurements were made by Eddy in the study of the physiological effects of five hypnotics and analgesics. He found that 50 to 60 per cent of the average fatal dose was necessary to produce stupor amounting to anæsthesia.

The statistical formula for measuring accuracy in results and for determining the number of animals necessary for a bio-assay was discussed by Dr. Munch and a set of the original bio-assay standards for U. S. P. X was exhibited.

One of the enjoyable features of the evening was the serving of a buffet luncheon, which also provided an excellent opportunity for fellowship and friendly exchange of pharmaceutical parlance by the seventy or more persons present.

The out-of-town guests included Dr. and Mrs. Samuel L. Hilton and Dr. Wm. T. McClosky of Washington, Mr. Lloyd N. Richardson of Bel Air, and Mr. J. B. Murphy of New Orleans, La.

President Kantner announced that Mr. C. T. Ichniowski was the recipient of the first annual award by the Baltimore Branch of one year's membership in the AMERICAN PHARMACEUTICAL ASSOCIATION to a student of the School of Pharmacy of the University of Maryland.

The following are the officers which were elected at the January meeting for the ensuing year:

President, Frank L. Black, 2839 W. North Ave., Baltimore.

Vice-President, Aquilla Jackson, 402 Roland Ave., Baltimore.

Secretary-Treasurer, B. Olive Cole, Greene & Lombard Sts., Baltimore.

Committee on Membership, Lawrence L. Miller, *Chairman;* Mrs. Anna C. Norton, Aquilla Jackson.

Committee on Professional Relations, E. G. Eberle, *Chairman;* Lloyd N. Richardson, L. M. Kantner.

Committee on the Science and Practice of Pharmacy, Glenn L. Jenkins, *Chairman;* Wm. J. Lowry, Jr., John C. Krantz, Jr.

Committee on Education and Legislation, A. G. DuMez, *Chairman;* R. L. Swain, P. I Heuisler.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The 179th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Tuesday, January 15th, at the University of Illinois School of Pharmacy.

The meeting was called to order by President Gathercoal and the annual report of the Secretary-Treasurer was given.

During the year 1928, eight meetings, the 171st–179th, were held at the School of Pharmacy with an average attendance of seventy-five. The speakers included Drs. Taylor, Schwarz, Leech, Pittenger, Beal, Fantus, Prof. Snow and Dr. Edmunds. During the year forty-three members withdrew but forty-five new members were added, giving a total membership on January 1, 1929, of 441.

FINANCIAL STATEMENT.

Balance 1/1/28	$250.22
Contributions (members)	140.50
Dues A. PH. A.	13.90
Commissions (new members)	23.00
	$427.62
Printing	$135.30
Postage	23.70
Taxi and phone	4.50
Dinners	14.45
Speakers	30.00
Cash on hand 1/1/29	219.67
	$427.62

The election of officers was the next order of business. The report of the nominating committee was presented, the report accepted and the nominees were duly elected.

OFFICERS.

President, J. Harry Lindahl
First Vice-President, H. N. Bruun
Second Vice-President, R. E. Terry
Third Vice-President, Walter A. Harris
Delegate, E. N. Gathercoal
Secretary-Treasurer, S. W. Morrison

CHAIRMEN.

Membership, C. P. Van Schaack
Legislation, J. Riemenschneider
Practice, I. A. Becker
Medical Relations, Dr. Bernard Fantus
Publicity, Samuel C. Henry

Mr. A. S. Boyer, who was to have been the speaker of the evening, could not be present due to an unexpected business trip to France. Mr. Boyer cabled his regrets to the Branch. In his absence, Messrs. Louis Clement and C. Ruhland of the Boyer Company gave most interesting talks on perfumes.

Mr. Clement, of the Boyer Company, France, was introduced and gave a very interesting talk on "The Perfume Industry." He gave a short history of the discovery of oil of rose, which is known as otto of roses. Most of the oil is produced in Bulgaria, where the climate and soil are most favorable, although France does produce considerable. Otto of roses is made from the red rose and was first distilled in 1680. The roses are cultivated by peasants and harvested during a three-week period in May and June. Four years are required for the seed to produce blooms after planting. The roses are picked in the morning before sunrise and then distilled. One person picks about one hundred pounds of roses per day. About three thousand pounds of roses are required to obtain one pound of the otto. This is equivalent to about fifty roses per drop. In 1928, 180,000 ounces of otto of roses were produced but 250,000 ounces were exported showing that there is considerable adulteration of the oil. The present market price of otto of roses is $264.00 per pound.

Mr. Clement related many interesting experiences of his travels through the various countries. He exhibited a rare book published in France in the 16th century, revealing the secrets of the perfume industry of that time. Another rare book printed in the 16th century contained household remedies and treatments and still another very old book on chemistry was shown. A toilet and manicure set, which had belonged to one of Napoleon's generals was exhibited and described.

The next speaker was Mr. C. Ruhland, manager of the Boyer Company, Chicago Branch. Mr. Ruhland showed how the public judge the quality of a perfume by the price and appearance of the container.

Perfumes are composed of many different substances. Fixatives are always added to make the odor more lasting. One of the chief fixatives is ambergris obtained from the sperm whale. It may be obtained from the whale after killing or it is sometimes expelled by the whale and found floating on the water. It has a very musty odor.

Other important animal fixatives are musk from the musk deer and civet from the civet cat. Civet has a vile, putrid odor, but in high dilution it gives a faint semblance of a pleasant odor. Indol and skatol, chemical fixatives, are used (in 10% solution) to push the perfume to the surface and release the odor readily. Other fixatives are coumarin, vanillin, musk and ambrette.

A volatile oil is used to give body to the perfume. Sweeteners are added; the most important of these is oil of ylang ylang; benzoin, styrax and tolu are also used for this purpose.

Substances known as fresheners aid in imitating the odor of the flowers; various aldehydes, phenyl acetic aldehyde and citral are used; one has the odor of fresh peaches, another the odor of strawberries.

In France cologne spirit (made from wine)

is employed in the perfume industry; after distillation benzoin is added to the alcohol and stored for several months to remove the rum odor. In the United States most of the alcohol for these industries is made from molasses (the part known as the middle run), and is denatured with diethylphthalate, brucine sulphate or other substances.

In making a rose perfume of the best grade only pure otto of roses would be used; many other substances are added, chief of these are geraniol, citronellol, phenyl ethyl alcohol and rhodinol (from *geraniums*). In the better perfumes musk, costing $200.00 a pound, serves as a fixative, while in the cheaper perfumes less of the oil and a cheaper fixative is used. Benzyl acetate, costing $1.35 a pound, enters into the manufacture of cheaper perfumes, taking the place of the natural Jasmin costing $900.00 a pound. Diphenyl oxide is also used in rose perfume as it is cheaper than the natural oil. Most perfumes contain 15 to 20 different ingredients.

Synthetic ionone is a component of violet perfumes; terpineol of lilac odors.

Perfumes are aged in warm rooms, and well protected from light.

Mr. Ruhland spoke briefly on the extraction of the odor from flowers by spreading the flowers on thin layers of fat; this method also extracts the waxes of the flowers, which serve to make the odor more lasting. A general discussion followed during which many questions were answered.

C. P. Van Schaack mentioned the enormous use of high grade perfumes in the South American countries and related his experience in the sale of perfume. The more expensive perfumes sell better than the cheaper ones. I. A. Becker told of a refined alcohol being made from sawdust, which is free from all sharp undesirable odor and suitable for the perfume industry.

Mrs. A. S. Boyer was one of the honored guests of the evening.

Following the regular session a reception for the new officers and new members was held in the library of the school. Refreshments were served and a good time was enjoyed by all.

S. W. MORRISON, *Secretary-Treasurer.*

DETROIT.

The December meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held December 11th in the Y. M. C. A. building. The usual excellent dinner preceded the meeting which was attended by twenty-four members. This number was increased to over sixty when the meeting was called to order.

In the absence of the President and the Vice-President, former President, Mr. Wheeler, took the chair.

The minutes of the November meeting were read by the Secretary and approved. Dean Lakey, Chairman of the Program Committee, announced that the January meeting would be given over to the H. K. Mulford Company, who are to show their film on "Anti-Snake-Bite Serum," accompanied by a lecture on same.

Chairman Ingram of the Committee on Membership announced receiving one membership, that of Miss Mahoney.

Mr. Wheeler then introduced the speaker of the evening, Dr. Louis Klein, head of the Department of Medical Service of Parke, Davis & Company.

Dr. Klein gave a most interesting talk on new aspects of gland therapy. He described, for the benefit of the attending members, some of the most recent pharmaceutical and therapeutic developments in the field of endocrine medication. He also told of the recent discovery of increasing the activity of gland products four times and more by a process of enteric coating.

Dr. Klein's talk was preceded by the showing of Parke, Davis & Company's film entitled, "How Biologicals Are Made." The assembly was impressed with the care that is taken to produce biologicals. A general discussion followed, led by Messrs. Webster, Ingram and Graber.

Dr. Klein answered the many questions put to him to the complete satisfaction of all, after which on motion of Mr. Webster a rising vote of thanks was given by the assembly.

JANUARY.

The January meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held in the Y. M. C. A. Building, January 17, 1929. The meeting was preceded by the usual dinner.

In the absence of President Byce, Vice-President Koelzer took the chair. The minutes of the previous meeting were read by the Secretary and approved. In the absence of Chairman Lakey, of the Program Committee,

Mr. Ingram reported that he would endeavor to have Carl Weeks at the February meeting.

Mr. Koelzer introduced as the speaker of the evening, Frank G. Ebner, head of the Drug Advertising Department of Parke, Davis & Company. Mr. Ebner pointed out fifteen ways to multiply drug store business. Among the important ideas advanced in Mr. Ebner's talk were:

First—By giving more careful study to windows, making them more productive and building up goodwill; getting more business.

Second—More thought to counter and inside displays, remembering that Woolworth built a business which runs into millions of dollars; a business built around counter display advertising.

Third—The use of direct mail advertising among physicians to build goodwill for your store and stimulate prescription business.

Fourth—Direct mail advertising among consumers who live in the immediate vicinity of the store, to promote the business of various departments of the store and build goodwill.

Fifth—Literature on the merchandise carried to educate the clerks and make them more efficient salesmen.

Mr. Ebner said that if these methods are followed, no fear of Chain Store competition need be feared; more business and more profit will result. He referred to two kinds of window displays, one price appeal, the other institution appeal. He also illustrated what a Flasher Light, at a cost not to exceed one dollar, would mean to attract attention to any window display. The speaker illustrated his talk with window and counter display ideas which were set up by George E. Harcourt, head of the Art Department of Parke, Davis & Company.

Mr. Harcourt, followed with a talk on "Modern Art in Display." He said modern art is not realistic, but someone's imagination. The attention value is obtained by unusual shapes, unusual grotesque figures, unusual composition or the harmonious or unusual use of colors. He said the attention value in the period just preceding modern art was by use of large lettering, showing uses of products, striking color schemes, some big central idea or an attempt at realism. The speaker held that legibility was of primary consideration; while in modern art lettering is hardly readable. Mr. Harcourt said modern art would not last, but it is a new idea and, while it lasts, should be given consideration in making up window displays to attract attention.

A general discussion followed, led by Messrs. Weaver and Ingram in which many good ideas of advertising were brought out. On motion of Mr. Ingram a rising vote of thanks was given to Messrs. Ebner and Harcourt for the most interesting and instructive evening.

BERNARD A. BIALK, *Secretary.*

NEW YORK.

A regular meeting of the New York Branch, A. PH. A., was held on Monday, January 14, 1929, in the Lecture Hall of the New York College of Pharmacy, President Schaefer presiding.

Chairman Lehman, of the Committee on Education and Legislation, presented a very interesting report on the recent Federal Trade Commission and prohibition rulings. As chairman of the Lascoff Dinner Committee he reported that a *tentative* date had been set for March 11th.

President Schaefer referred to the untimely death of our dear member Charles Oats. Dr. Diner spoke on Mr. Oats' activities in pharmacy and asked that the members rise in silent tribute.

Chairman Diner of the Committee on Nominations presented the following report:

OFFICERS.

President, Hugo H. Schaefer
Vice-President, Richard H. Timmermann
Secretary, Robert R. Gerstner
Treasurer, Turner F. Currens

CHAIRMEN.

Progress of Pharmacy, Reginald Dyer
Fraternal Relations, Harry Goldschmidt
Audit, Robert S. Lehman
Delegate to House of Delegates, Clyde L. Eddy
Membership, H. B. Smith

It was regularly moved and seconded and carried that the Chairman cast a ballot electing the names presented.

Dr. Schaefer presented Prof. H. V. Arny, the speaker of the evening, who spoke on the "Influence of Light on Medicinal Products." Prof. Taub explained the use of the apparatus used in measuring the intensity and quality of light rays.

R. R. GERSTNER, *Secretary.*

NORTHWESTERN.

A meeting of the Northwestern Branch was held on January 17th, in the auditorium of the College of Pharmacy, University of Minnesota, Chairman R. Almin presiding.

Dean Wulling of the College of Pharmacy outlined the organization of the National Association of Boards of Pharmacy and of the American Association of Colleges of Pharmacy and showed how the Minnesota Pharmaceutical Educational Conference resulted from a nation-wide plan advocated by these two bodies. He then abstracted a report from the meeting of this conference held January 14th, the most important feature of which was the recommendation of a minimum four-year college requirement for a candidate for registration in Minnesota. (This report will be published in full in an early issue of the JOURNAL.)

Members from the student body of the College of Pharmacy read the following published articles:

"Graduate Education in Pharmacy," by G. L. Jenkins, printed in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, by B. Gilquist.

"The Story of Perfumes," by Curt P. Wimmer, printed in *The Messenger* of the College of Pharmacy, Columbia University. Read by Miss Essie Sagarsky.

"Filling the Physicians' Prescriptions," an editorial in the *Journal of the A. M. A.* Read by L. Schwarten.

Instructors Peterson and Netz of the College Faculty commented upon the value of the material in these articles.

The Chairman announced that he would appoint a nominating committee to recommend candidates for the various offices, this committee to report at the next meeting, to be held jointly with the Scientific Section of the Minnesota State Pharmaceutical Association.

C. V. NETZ, *Secretary.*

PHILADELPHIA.

The January meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Tuesday evening, January 8th, at the Philadelphia College of Pharmacy and Science, Philadelphia. President Nichols presided.

The minutes of the December meeting were approved. President Nichols announced plans for the February meeting. This will be a symposium with the County Medical Society and will be held on Wednesday evening, February 20th, at 8:30 P.M., at the building of the County Medical Society, S. E. cor. 21st and Spruce Sts., Philadelphia. Messrs. LaWall, Cook and Hunsberger will be the speakers to represent Pharmacy, and the Medical Society will likewise be represented by three of their members. All pharmacists and their friends are urged to be present.

The speaker of the evening was Joseph W. England, and he chose as his topic "The Norwegian Cod-Liver Oil Industry." Bergen, one of the most picturesque cities of Norway, depends upon its fisheries for its main income and here centers the Norwegian Cod-Liver Oil Industry. The oil is obtained from the fresh livers of the cod (*Gadus morrhua* Linné and of other species of *Gadus*) by means of steam at a temperature which may reach 98° C. but is usually lower. It is then cooled to a temperature of about 1° C. and the liquid portion, producing the "non-freezing" oil of commerce, is expressed and filtered through canvas. Drummond claims that the Newfoundland oil is equal to the Norwegian oil in content of vitamines. Poulsson claims that Norwegian oil is better in odor and taste. The Norwegian oil runs from 450 to 500 vitamine A units per Gm. (U. S. P. X Method), and from 200 to 250 vitamine D units per Gm. (Poulsson Method).

There is a possibility, strange as it may seem, that cod-liver oil may have a new therapeutic rival, the use of which may effect the whole cod-liver oil industry. In the opinion of Alfred F. Hess and J. M. Lewis (*Journal A. M. A.* (Sept. 15, 1928)), activated ergosterol is by far the most potent of antirachitic substances. It is 100,000 times as active as cod-liver oil. It is difficult to appraise the strength of the irradiated ergosterol in the preparations tried owing to the fact that ergosterol itself is by no means a uniform product. Whether or not irradiated ergosterol is the therapeutic equivalent of cod-liver oil in all respects can only be told by an extended series of comparative clinical tests with both substances, and this will take a long time. So there need be no fear of immediate danger to the cod-liver oil industry.

Discussion followed Mr. England's talk and a motion of thanks to the speaker was made and unanimously carried.

MARIN S. DUNN, *Secretary.*

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1928–1929.

Office of the Secretary, 10 West Chase St., Baltimore, Md.

LETTER NO. 4.

January 14, 1929.

To the Members of the Council:

40. Selection of Auditors. Motion No. 6 (see Council Letter No. 3, page 68) has been carried and W. A. Johnson & Company will audit the accounts of the ASSOCIATION for 1928. The accounts were turned over to the auditors on January eleventh.

41. Increase in Appropriation for 1928 for Headquarters Building Campaign Committee. Motion No. 7 (see Council Letter No. 3, page 68) has been carried.

42. Appropriation for Committee on Biological Products. Motion No. 8 (see Council Letter No. 3, page 68) has been carried.

43. Use of Text of N. F. V. Motion No. 9 (see Council Letter No. 3, page 68) has been carried.

44. Contract for Printing and Mailing the Journal of the A. Ph. A. for 1929. Motion No. 10 (see Council Letter No. 3, page 68) has been carried and the contract awarded to the Mack Printing Company, Easton, Pa.

45. Budget for 1929. Motion No. 11 (see Council Letter No. 3, page 69) has been carried and the budget, as submitted, is adopted.

46. Election of Members. Motions Nos. 12 and 13 (see Council Letter No. 3, page 69) have been carried and applicants for membership numbered 53 to 78, inclusive, and applicants for membership numbered H-8 and H-9 are declared elected.

47. Election of Officers and Members of the Council. The Board of Canvassers of the AMERICAN PHARMACEUTICAL ASSOCIATION composed of Oscar Hallenberg, Glenn M. Cook and H. O. Tiegen, all of Bismarck, N. Dak., has announced as the result of the mail ballot for officers of the ASSOCIATION the election of the following:

President, H. A. B. Dunning, Baltimore, Md.

First Vice-President, A. L. I. Winne, Richmond, Va.

Second Vice-President, W. B. Goodyear, Harrisburg, Pa.

Members of the Council (for three years), J. H. Beal, Camp Walton, Fla.; C. E. Caspari, St. Louis, Mo.; C. H. LaWall, Philadelphia, Pa.

Member of the Council (for one year, to fill the unexpired term of the late Geo. M. Beringer), W. Bruce Philip, San Francisco, Calif.

48. Survey of Pharmacy and of Pharmaceutical Education. In accordance with the invitation from the National Association Boards of Pharmacy and the American Association of Colleges of Pharmacy, to the A. PH. A. to join in the proposed survey, President Jones appointed E. F. Kelly, Baltimore, Md.; W. W. Horne, Fayetteville, N. C., and H. A. B. Dunning, Baltimore, Md., as the representatives of the A. PH. A. on the joint committee. A meeting of the joint committee was held at Washington, D. C. on December 13, 1928, and a second meeting is called for January 30, 1929, after which a full report will be made to the Council.

49. Committee on Pharmacy Week. The following communication and financial report have been received from Chairman Robert J. Ruth:

"It is with a bit of pride that I submit my report of expenses for the 1928 National Pharmacy Week Campaign.

"You will note that I have a balance on hand of $274.24. I do not intend to ask for an appropriation for the 1929 campaign as I believe that the unexpended portion of my 1928 appropriation will serve amply to finance the campaign for 1929.

"The success of the past observance of National Pharmacy Week speaks for itself. It was by far the most successful of any campaign we have put over. The National Wholesale Druggists' Association and the Owens Bottle Company, as you know, rendered valuable assistance under our direction.

"Within the next two weeks I am going to release a short story to the journals covering the most important features of the 1928 observance.

"I might add that I have in my files the receipts and cancelled checks covering the main expenditures which will be available

for your Auditing Committee at any time they may wish to audit this account.

"I am sending a copy of this statement to the National Association of Retail Druggists."

COMMITTEE ON PHARMACY WEEK.

Expenses for 1928.

Printing of letterheads and envelopes; mimeographing and multigraphing of letters	$43.97	
Stenographic services	93.25	
Postage	43.10	
Telegrams and long distance telephone	36.12	
To C. Fred Wright, Chairman of the N. A. R. D. Committee on Pharmacy Week (for expenses)	14.00	$230.44
Unexpended portion of budget appropriation in 1926	4.68	
(This remains as a balance from $500.00 appropriated jointly by the N. A. R. D. and the A. PH. A. for the 1926 observance. The appropriation served to finance both the 1926 and 1927 observances, leaving an unexpended balance of $4.68)		
Budget for 1928	500.00	$504.68
(This budget was furnished jointly by the N. A. R. D. and the A. PH. A., each Association contributing $250.00)		
Total Fund		504.68
1928 Expenses		230.44
Balance on hand January 1, 1929		$274.24

(*Motion No. 14.*) *It is moved by Kelly that the financial report be accepted and approved, and that the Committee be authorized to employ the balance for its use during 1929.*

50. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received.

No. 79, William Webster Barkley, P. O. Box 513, University, Miss.; No. 80, Lloyd A. Daniels, 319—6th Ave., S. E., Aberdeen, S. D.; No. 81, Arthur Gordon Gill, 417 W. Gorham St., Madison, Wis.; No. 82, Lyle Whistler Griffith, Blue Hill, Nebr.; No. 83, E. Dewey Hess, Washington, Iowa; No. 84, Walter W. Holt, c/o Mennen Company, Newark, N. J.; No. 85, I. C. Larson, 1310—4th Ave. So., Moorhead, Minn.; No. 86, Abraham D. Lesser, 819 Lake Drive, Baltimore, Md.; No. 87, Patricia Anne Mahoney, 2640 Virginia Park, Detroit, Mich.; No. 88, Albert C. Marugg, 2309 Irving Ave. So., Minneapolis, Minn.; No. 89, C. C. Maxwell, Arlington, S. D.; No. 90, August William Meyer, Jr., 2106 East 47th St., Seattle, Wash.; No. 91, Lester Vaugh Moore, 144 S. Bryant Ave., Bellevue, Pa.; No. 92, Glenn Arthur Runwill, Watertown, S. D.; No. 93, George B. Saylor, 106—23rd St., Pittsburgh, Pa.; No. 94, Moe Simonowitz, 1299 Eastern Parkway, Brooklyn, N. Y.; No. 95, William Ernest Walmsley, Main St., Follansbee, W. Va.; No. 96, Albert A. Woodward, 214 S. Main St., Aberdeen, S. D.; No. 97, John U. Young, 1431 Boulevard of the Allies, Pittsburgh, Pa.

(*Motion No. 15.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

51. Applicants for Membership on Account of Contributions to the Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

H-10, Vahey H. Coumarian, 364—61st St., Brooklyn, N. Y.

(*Motion No. 16.*) *Vote on applications of contributors to the Headquarters Building Fund for membership in the American Pharmaceutical Association.*

E. F. KELLY, *Secretary.*

LETTER NO. 5.

January 31, 1929.

To the Members of the Council:

52. Committee on Pharmacy Week. Motion No. 14 (see Council Letter No. 4) has been carried and Chairman Ruth of the Committee has been so advised.

53. Election of Members. Motions Nos. 15 and 16 (see Council Letter No. 4) have been

carried and applicants for membership numbered 79 to 97, inclusive, and applicants for membership numbered H-10 are declared elected.

54. Committee on Pharmacy Corps. Attached is a copy of a bulletin advising that "A bill to amend the National Defense Act by providing for a Pharmacy Corps in the Medical Department, United States Army" has been introduced in the House of Representatives by Congressman Clyde Kelly of Pennsylvania and in the Senate by Senator Royal S. Copeland of New York. It is hoped to have a hearing on these bills at an early date and copies of them are enclosed.

55. Year Books, Volume 16 (for 1927) and 17 (for 1928). The following communication has been received from Chairman DuMez of the Committee on Publications:

> "In the Annual Report of the Committee on Publications to the Council at the Portland meeting, it was recommended that the Council take definite action on the suggestion that the Reports of the Progress of Pharmacy for 1927 and that for 1928 be published jointly in one volume (see JOURNAL A. PH. A. for Sept. 1928, page 913).
>
> "Action was not taken at that time because more complete information was desired as to the possible saving and as to the certainty that the combined volume, if decided upon, could be issued in 1929.
>
> "Quotations have been obtained on a single volume of 656 pages and on a combined volume of the estimated size of 1200 pages. A dummy book containing 1200 pages has been bound and it does not make an unwieldy volume, being no thicker than some volumes of the PROCEEDINGS. The Lord Baltimore Press, Baltimore, Md., which firm printed Volume 15, submitted the lowest bid, and comparing the estimated cost of a single volume with that of the combined volume there is a saving of $1243.06. There will be an additional saving in the use of standing matter and in the mailing which cannot be accurately determined but which will certainly bring the total saving to at least $1400.00.
>
> "In order to complete the abstracting, etc., for Volume 17, for 1928, in time to insure the issuance of the combined volume in 1929, an expenditure of not more than $500.00 will be required and with this expenditure subtracted, the ASSOCIATION should save approximately $900.00 by printing the two reports in a combined volume and more important still, the YEAR BOOKS would thus be brought up to date.
>
> "The Secretary is prepared to promptly furnish the ASSOCIATION data which appear in the first part of the YEAR BOOK. Here a considerable part of the saving would be effected as the List of Officers, etc., Constitution and By-Laws, Articles of Incorporation, Code of Ethics and data about the funds will be printed but once and most of this matter is in standing form.
>
> "Dr. H. V. Arny, who is preparing the manuscript for Volume 17, advises that ninety per cent of it is now available and that the remainder will be ready by April first.
>
> "The Lord Baltimore Press is willing, if the contract for the combined volume is awarded to them, to complete the printing of the book up to the report for 1928, completing the remainder of the contract as soon as the manuscript for the 1928 report is available.
>
> "The combined volume would bear Nos. 16 and 17, and would be furnished to those who pay dues for 1929 and express the desire to have it.
>
> "The Committee on Publications recommend that the Report on the Progress of Pharmacy for 1927 and that for 1928 be printed in one volume and that the contract for its manufacture and distribution be awarded to the Lord Baltimore Press on the basis of their bid—which is at the same cost for composition as for Volume 15."

(*Motion No. 17.*) *It is moved by DuMez that the Report of the Progress of Pharmacy for 1927 and that for 1928, with the usual Association data, be printed in one volume.*

(*Motion No. 18.*) *It is moved by DuMez that the contract for printing and mailing the combined Year Book, Volumes 16 and 17, be awarded to the Lord Baltimore Press, Baltimore, Md.*

56. Report of the Auditors. The following report has been submitted:

January 29, 1929.

Mr. C. W. Holton, Treasurer,
AMERICAN PHARMACEUTICAL ASSOCIATION,
Baltimore, Maryland.

Dear Sir:

I have made an examination of the books and accounts of the AMERICAN PHARMACEUTICAL ASSOCIATION and of your report as Treasurer, for the calendar year 1928, and I HEREBY CERTIFY that the total cash on hand at December 31, 1928, amounts to $397,456.65, which together with the cost of Real Estate in Washington, D. C., total $490,309.98 as shown by your report.

I have also examined the record maintained by the Secretary of the ASSOCIATION and have traced the transfer of funds from his account to that of the Treasurer.

All cash receipts have been traced to deposits in bank to the credit of the respective funds for which received, and all disbursements have been found evidenced by properly authorized voucher checks.

Balance on deposit with the various banks have been reconciled with certificates from the depositories, and investment securities held by the ASSOCIATION have been examined and found to be in agreement with accounts shown by the records.

Respectfully submitted,
(Signed) W. A. JOHNSON,
Certified Public Accountant.

In order that the members of the Council and others interested may be informed, the following data are quoted from the Treasurer's Report for the year:

January 1, 1928, to December 31, 1928.

BALANCE AND RECEIPTS.

BALANCE.			
Cash in Merchants & Newark Trust Co., Newark, N. J.		$ 1,520.79	
Cash in Boston Penny Savings Bank		305.24	
Cash in Baltimore Trust Co. (Secy.'s Account)		2,293.62	
Total cash balance January 1, 1928			$ 4,119.65
RECEIPTS.			
For the Current Fund.			
From the Secretary (see account attached)	$42,849.87		
Interest on deposit Boston Penny Savings Bank	14.66		
Interest on deposit Merchants and Newark Trust Co.	67.28		
Interest on Headquarters Building Fund	8,675.14	51,606.95	
For the Permanent Funds.			
Endowment	495.56		
Centennial	167.43		
Ebert Legacy	264.57		
Ebert Prize	44.86		
Life Membership	1,504.11		
Research	6,116.95		
Headquarters Building	100,632.98	109,226.46	

For the Trust Funds.			
Wm. Procter, Jr., Monument	551.50		
J. P. Remington Honor Medal	1,053.54	1,605.04	
Total receipts			$162,438.45
Total Balance and Receipts			$166,558.10

DISBURSEMENTS AND BALANCE.

From the Current Fund.	Budget appropriations.	Budget disbursements.
GENERAL EXPENSES.		
Salaries	$11,700.00	$11,699.92
Rent	1,020.00	1,020.00
Telegraph and Telephone	150.00	175.91
Clerical Expenses	1,400.00	1,189.00
Printing, Postage and Stationery	1,200.00	1,333.39
Office Supplies	100.00	69.35
Traveling Expenses	1,000.00	1,150.62
Stenographic Report of Meeting	350.00	...
Premium on Bonds	60.00	50.00
Auditing	75.00	75.00
Certificates	50.00	19.16
Miscellaneous	150.00	130.54
Scientific Section	25.00	35.54
Section on Education and Legislation	25.00	11.50
Section on Practical Pharmacy and Dispensing	25.00	25.09
Section on Commercial Interests	25.00	8.50
Section on Historical Pharmacy	25.00	6.50
Commission on Proprietary Medicines	50.00	
Committee on Local Branches	25.00	
Committee on Membership	1,000.00	199.78
Committee on Legislation	100.00	
Committee on Syllabus	50.00	50.00
Committee on Standard of Drugs and Chemical Products	50.00	
Committee on Colored Glass Containers	50.00	35.03
National Drug Trade Conference	200.00	
Drug Trade Bureau of Public Information	400.00	400.00
International Pharmaceutical Federation	240.00	240.00
Metric Association	10.00	10.00
American Conference on Hospital Service	25.00	25.00
Survey of Commercial Pharmacy	500.00	
Expenses Chairman House of Delegates	100.00	
Headquarters Building Campaign	8,500.00	10,627.34
YEAR BOOK	4,500.00	2,649.19
Library	100.00	25.50
Committee on Pharmacy Week	250.00	250.00
Committee on Biological Products	26.70	26.70
Total Appropriations for General Expenses	$33,556.70	
Total Disbursements for General Expenses		$31,538.56

OPEN ACCOUNTS.			
JOURNAL		$11,000.00	$14,524.34
National Formulary		1,000.00	3,560.41
Recipe Book		1,000.00	766.66
Badges and Bars		50.00	30.00
Total Budget Appropriations		$46,606.70	
Total Budget Disbursements			$50,419.97
Transfer of one-half net profits of National Formulary for 1927 to Research Fund			4,536.19
Total Disbursements from Current Fund by Voucher Check			$54,956.16
From the Permanent Funds.			
Ebert Prize, Prizes for 1927 and 1928	$ 101.54		
Research, Award for 1927–1928	200.00		
Research, Award for 1928–1929	450.00		
Research, Expenses	6.48		
Research, Nat. Conference on Pharmaceutical Research	20.00		
Headquarters Building, Charge for Unpaid Checks, Drovers and Mechanics National Bank	129.25		
Headquarters Building, transfer of Interest to Checking Account	8,675.14		
Total Disbursements for Permanent Funds by Voucher Check		$ 9,582.41	
Total Disbursements by transfer of Permanent Funds		99,644.05	
Total Disbursements from Permanent Funds			109,226.46
From the Trust Funds.			
Remington Honor Medal, Medal for 1928	35.00		
Total Disbursements from Trust Fund by Voucher Check		35.00	
Total Disbursement by transfer of Trust Funds		1,570.04	
Total Disbursements for Trust Funds			1,605.04
Total Disbursements			$165,787.66
BALANCE IN CURRENT FUND.			
Cash in Merchants and Newark Trust Co.		450.54	
Cash in Boston Penny Savings Bank		319.90	
Total Balance in Current Fund December 31, 1928			770.44
Total Disbursements and Balance			$166,558.10

COMPARISON OF FUNDS.

CURRENT FUND.

	Dec. 31, 1927.	Dec. 31, 1928.
Cash in Merchants & Newark Trust Co.	$ 1,520.79	$ 450.54
Cash in Boston Penny Savings Bank	305.24	319.90
Cash in Baltimore Trust Co. (Secy.'s account)	2,293.62	
Total Current Fund	$ 4,119:65	$ 770.44

PERMANENT FUNDS.		
Endowment Fund	12,008.81	12,504.37
Centennial Fund	4,656.80	4,824.23
Ebert Legacy Fund	6,822.43	7,087.00
Ebert Prize Fund	1,137.19	1,080.51
Life Membership Fund	34,562.93	36,067.04
Research Fund	43,233.72	48,674.19
Headquarters Building Fund	267,144.00	363,670.60
Total Permanent Funds	$369,565.88	$473,907.94
TRUST FUNDS.		
Wm. Procter, Jr., Monument Fund	$ 13,732.03	$ 14,283.53
Jos. P. Remington Honor Medal Fund	1,329.53	1,348.07
Total Trust Funds	$ 15,061.56	$ 15,631.60

SUMMARY OF FUNDS.

Current Fund	4,119.65	770.44
Permanent Funds	369,565.88	473,907.94
Trust Funds	15,061.56	15,631.60
Total Funds	$388,747.09	$490,309.98

SUMMARY OF ASSETS AND TRUST FUNDS.

	Dec. 31, 1925.	Dec. 31, 1926.	Dec. 31, 1927.	Dec. 31, 1928.
Current Fund	$ 5,280.72	$ 15,157.69	$ 4,119.65	$ 770.44
Permanent Funds	258,075.29	310,869.35	369,565.88	473,907.94
Total Assets	263,356.01	326,027.04	373,685.53	474,678.38
Trust Funds	13,915.35	14,443.05	15,061.56	15,631.60
Total Funds	$277,271.36	$340,470.09	$388,747.09	$490,309.98

57. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 98, Walden F. Ambroz, 874 Union St., Memphis, Tenn.; No 99, Edward Binder, 644 College St., Toronto, Canada; No. 100, Maxwell Cohen, 62 Harrison St., Toronto, Canada; No. 101, John Glassford, 2703 Chelsea Terrace, Baltimore, Md.; No. 102, Carlos G. Gonzalez, 10 Atocha St., Ponce, P. R.; No. 103, Wm. S. Gordon, 307 Madison Ave., New York, N. Y.; No. 104, Cecil Griffith, Lime Springs, Iowa; No. 105, Maurice Haberman, 3108 Dundas St., W., Toronto, Canada; No. 106, Casimer T. Ichniowski, 2010 Fleet St., Baltimore, Md.; No. 107, Mooney S. Mirochnick, 811 Dundas St. W., Toronto, Canada; No. 108, William H. Page, 307 Madison Ave., New York, N. Y.; No. 109, Walter Pero, 263 Townsend St., New Brunswick, N. J.; No. 110, H. Eugene Polhemus, Research Laboratory, Johnson & Johnson, New Brunswick, N. J.; No. 111, Henry Sackin, 320 Markham St., Toronto, Canada; No. 112, Leon L. Scher, 326 College St., Toronto, Ont.; No. 113, S. R. Seaver, 233 So. 10th St., Lincoln, Nebr.; No. 114, George W. Short, 307 Madison Ave., New York, N. Y.; No. 115, Charles Zeugner, 240 Crestmont Terrace, Collingswood, N. J.

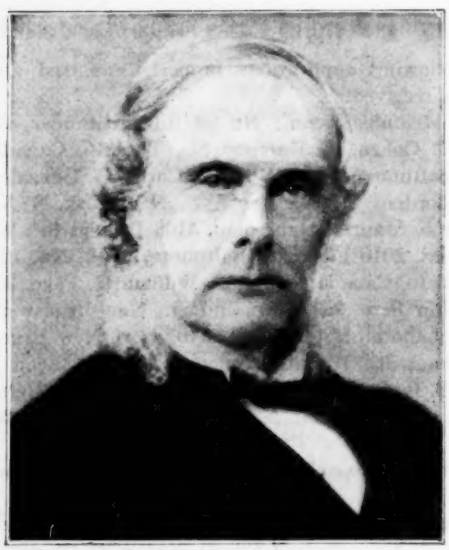
(Motion No. 19.) Vote on applications for active membership in the American Pharmaceutical Association.

58. Applicants for Membership on Account of Contributions to the Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

H-11, Emil Anastasio, 3729—72nd Street, Jackson Heights, L. I., N. Y.; H-12, Clemence Barich, 1997 Montreal Ave., St. Paul, Minn.; H-13, Ernest John Bastian, 1416 Lexington Place, Elizabeth, N. J.; H-14, David Bender, 2305 Grand Ave., Bronz, N. Y.; H-15, William Francis Barry, 311 South Third St., Livingston, Mont.; H-16, Bernard H. Booth, Jr., Dow, Miss.;

H-17, James W. Booth, 121 Center St., East Aurora, N. Y.; H-18, Irving Bower, 3145 Main St., Bridgeport, Conn.; H-19, Reuben Cheron, 275 Hooper St., Brooklyn, N. Y.; H-20, Benjamin E. Cohen, 1339 St. Lawrence Ave., Bronx, N. Y.; H-21, Louis Cohen, 124 Hillside Ave., Hartford, Conn.; H-22, Willets Corson, Mechanic St., Cape May Court House, N. J.; H-23, Abraham Dodek, 810 Tinton Ave., New York, N. Y.; H-24, Dudley H. Ewell, 60 East Main St., LeRoy, N. Y.; H-25, Gilbert F. Fox, Monona, Iowa; H-26, Libero Gardella, 2048 W. Van Buren, Chicago, Ill.; H-27, Hellmut W. Hellmann, 204 Harvard Ave., Minneapolis, Minn.; H-28, Albert L. Hock, Jr., 476 Highgate St., Buffalo, N. Y.; H-29, John B. Kalasinski, 10514 Avon Ave., Cleveland, Ohio; H-30, Cisco Kihara, 255 East Center St., Pocatello, Idaho; H-31, Frank R. Langworthy, Marcellus, N. Y.; H-32, Eldred C. Loughborough, Jefferson Ave. Ext., Pittsford, N. Y.; H-33, Corthelle S. Mack, 512 N. Tioga St., Ithaca, N. Y.; H-34, Abraham Malinsky, 399 Atkins Ave., Brooklyn, N. Y.; H-35, Marion M. Mazurowski, 668 Northampton St., Buffalo, N. Y.; H-36, John O. Murdoch, 16 Hambro Park, Caledonia, N. Y.; H-37, Herman Edward Myers, 1600 Lincolyn Way, McKeesport, Pa.; H-38, Albert Nowak, 5310 Oakdale Ave., Chicago, Ill.; H-39, William Joseph O'Brien, 76 Florence St., New Bedford, Mass.; H-40. Irving A. Oliker, 573 New Jersey Ave., Brooklyn, N. Y.; H-41, C. Donald Pusbach, 15 High St., Salamanca, N. Y.; H-42, John R. Ramsey, 514 Oak St., Graham, Texas; H-43, Leonard S. Regner, 239 Laburnum Crescent, Rochester, N. Y.; H-44, Milton Reife, 321 Warburton Ave., Yonkers, N. Y.; H-45, Glenn W. Rush, 131 E. Crawford Ave., Connellsville, Pa.; H-46, Max M. Schwartz, 404 E. 187th St., New York, N. Y.; H-47, Gifford A. Sherwood, 2317 Milton Ave., Solvay, N. Y.; H-48, Israel Star, 524 West 145th St., New York, N. Y.; H-49, Donald F. Stocks, 557 East Bethume St., Detroit, Mich.; H-50, Robert B. Swisher, 2820 Cedar St. Blvd., Portsmouth, Ohio; H-51, Harry F. Valway, 9102 Miles Park Ave., Cleveland, Ohio; H-52, Abner P. Ward, Stockbridge, Ga.; H-53, Floyd E. White, R. F. D. No. 2, Meridian, Idaho; H-54, Raymond F. Winship, 100 Buffalo St., Springville, N. Y.

(*Motion No. 20.*) *Vote on applications of contributors to the Headquarters Building Fund for membership in the American Pharmaceutical Association.* E. F. KELLY, *Secretary.*



JOSEPH LISTER, M.D.

It was in 1879 (fifty years ago) that the work of Lister received the recognition of the International Congress of Medical Science, in Amsterdam. (See page 341, April 1917, JOUR. A. PH. A.)

SCHOLARS' USE OF SCIENCE MUSEUM.

In their interim report, which has recently been published, the Royal Commission on National Museums and Galleries has drawn attention to the important part that museums can play in education. The greatly increased attendance at the Science Museum during the recent mid-term holidays for the London schools, has provided a striking instance of the readiness with which young people avail themselves of such opportunities. The number of visitors to the Science Museums was 7044 on the first day and 6140 on the second, as compared with an ordinary daily attendance of 1550 for corresponding days at this time of the year.

PRODUCTION OF SYNTHETIC CAMPHOR—FRANCE.

According to a report received from Assistant Military Attache Charles R. Alley, Paris, the Societe Alsacienne des Produits Chimiques, which has been experimenting in the production of synthetic camphor by a German method and also by a method developed by the organization, obtained satisfactory results from the former, license rights to which had previously been acquired, and is now planning the production of this commodity on a large scale.

COMMITTEE REPORTS

REPORT OF COMMITTEE ON PHYSIOLOGICAL TESTING.*

Although no coöperative work was conducted by this Committee as a whole, every member collaborated in the study by the Association of Official Agricultural Chemists of the official U. S. P. X 1-hour frog method for the assay of digitalis, planned and directed by J. C. Munch, one of the members of this Committee. Three samples of tincture of digitalis were sent to twenty-eight collaborators; reports were received from twenty-one, of whom nineteen used the official method. Ten of these investigators who were experienced in the use of this method of assay obtained results within 10 per cent of theory. Nine submitted results which showed an average variation of 15 per cent from theory. The detailed report of this investigation was published in the *Journal of the Association of Official Agricultural Chemists* for August 15, 1928.

In collaboration with a similar committee from the American Drug Manufacturers Association coöperative assays of three samples of digitalis by the 1-hour frog method were made by several members of this Committee. Wide variations in results indicate that this method is not suitable.

Certain members also collaborated in the U. S. P. X cockscomb assay for Fluidextract of Ergot conducted by Wm. T. McClosky, F. D. I. Administration, Washington, D.C. E. E. Swanson also studied the assay of ergot upon the isolated rabbit uterus, by a modification of the Clark and Broome method.

J. C. Munch and Wm. T. McClosky analyzed a number of desiccated posterior pituitary powders, U. S. P. X, obtained directly from the manufacturers as representing their regular commercial output. In a paper presented before the Scientific Section at this Convention, they propose a definite physiological standard for Pituitarium in U. S. P. XI (U. S. P. X does not include a physiological standard for this product, although it is used for the preparation of Liquor Pituitarii, which does have a physiological standard). L. W. Rowe (*Journal Am. Chem. Soc.*, January 1928) performed the physiological assays in a combined chemical and physiological investigation of the active principles of Liquor Pituitarii which indicated the presence of two active principles, one exclusively pressor and the other exclusively oxytocic. Several members of the Committee have prepared posterior pituitary powder by the U. S. P. X method for the preparation of the official standard powder, which corresponded in activity to the official lot of standard powder prepared and distributed by the F. D. I. Administration. This confirms previous reports that fresh posterior pituitary glands are uniformly active, and that the variations in potency of Liquor Pituitarii are introduced during the processes of manufacture.

Papers presented before the Scientific Section at this Convention demonstrated the practicability of the Munch method for the bio-assay of mydriatics and myotics.

During the course of the year, L. W. Rowe, E. E. Swanson and Paul S. Pittenger have published papers on the methods of recording the physiological actions, and the bio-assay of ephedrine.

E. E. Swanson has continued his work on the effect of p_H on the stability of aconite, nux vomica, gelsemium and ergot.

As the Chairman is also the Chairman of the Committee on Pharmacology and Bio-Assays of the National Conference on Pharmaceutical Research, and one other member also serves on both committees, a joint session of the members of both committees at the Portland meeting was held to plan coöperative work in which both committees could participate. An extensive plan of research upon the bio-assay of Digitalis and of Ergot has been promulgated for the consideration of the 1929 Committee.

Respectfully submitted,

(Signed)
PAUL S. PITTENGER, *Chairman*
L. W. ROWE
EDWARD E. SWANSON
J. C. MUNCH

* Portland meeting, A. PH. A., 1928.

PHARMACY WEEK CLICKED.

BY ROBERT J. RUTH, CHAIRMAN.

In telling about the fourth annual observance of National Pharmacy Week, October 14–20, 1928, Chairman Robert J. Ruth, of the Pharmacy Week Executive Committee, which is composed of the members of the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Association of Retail Druggists' Committees on Pharmacy Week, writes, "Pharmacy Week surely 'clicked' in October. Pharmacists need little urging anymore to enthuse them over this important annual event which exposes the true spirit of their profession and impresses the public with the importance of pharmaceutical service."

The success of Pharmacy Week is due in no small part to the pharmaceutical journals. The editors devoted much valuable space to editorials and publicity, published window suggestions, photographs of attractive Pharmacy Week windows and other helpful information.

The Committee on Education and Research of the National Wholesale Druggists' Association enlarged upon its helpful program of former years, and working in close harmony with the Pharmacy Week Executive Committee, supplied attractive window display material lithographed in six colors. Secretary E. L. Newcomb, of the N. W. D. A. reported that 21,270 sets of window display material were ordered by wholesale drug houses which supplied them upon request to retail druggists, and that there were many requests for more sets after the supply was exhausted.

The Owens Bottle Company, Toledo, Ohio, added a valuable contribution to the Pharmacy Week publicity program. They supplied retail druggists, colleges of pharmacy and others interested with reproductions of their beautiful and inspiring painting, "The Druggist," which was exceedingly appropriate for and widely used in Pharmacy Week windows. They also furnished matrices for full-page and half-page newspaper spreads carrying a splendidly dignified Pharmacy Week message to the public and built around the picture, "The Druggist." It is most gratifying to state that no attempt was made to commercialize this excellent and helpful publicity. The plan was first submitted to the Executive Committee on Pharmacy Week, and was approved.

The office of the Chairman of the Executive Committee on National Pharmacy Week at 80 Beekman Street, New York City, sent out in great number, outlines for Pharmacy Week windows, copies of radio talks and addresses suitable for clubs, layouts for newspaper spreads and copy for editorials and news stories, in answer to requests from retail druggists, pharmaceutical associations and others requesting such service.

Many other methods were employed to disseminate public information concerning the rôle which the pharmacist plays in the public health picture. Exhibits in theatre lobbies, street car cards, inside store exhibits, hundreds of talks before service clubs, women's civic clubs and similar organizations, slides in motion picture theatres, thousands of newspaper spreads, news stories and editorials, circular letters and chats with drug store patrons all contributed to make Pharmacy Week a powerful influence.

Chairman C. Fred Wright, of Boston, of the N. A. R. D. Committee on Pharmacy Week again worked arduously and his enthusiastic leadership was largely responsible for the success which the fourth annual Pharmacy Week attained. Dr. R. B. J. Stanbury, Secretary of the Canadian Pharmaceutical Association, reports an observance in Canada that was fully as general and successful as was ours in the United States. Pharmacy Week in both countries occupied the same dates and the same methods of observance were employed.

Pharmacy Week reports have not been received from England, South Africa, Australia, Tasmania and New Zealand, but if plans for the week which were submitted from those countries, were fully carried out it can be stated that the Pharmacy Week message echoed around the world.

Already plans are being laid for the Fifth Annual Observance of Pharmacy Week, October 13–19, 1929. New and unique features will be employed and it can be predicted that one will have to seek absolute isolation for at least seven days next October to escape being rendered "Pharmacy Conscious."

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, H. A. B. DUNNING, H. C. CHRISTENSEN, J. A. KOCH, J. H. BEAL, W. B. DAY, T. J. BRADLEY. *Ex-Officio Members:* D. F. JONES, *President;* A. W. PAULEY, W. H. ZEIGLER, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* AMBROSE HUNSBERGER, *Chairman of the House of Delegates.*

Collaborators: The Members of the Council; E. FULLERTON COOK, *Chairman,* U. S. P. Revision Committee; W. L. SCOVILLE, *Chairman,* N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.; J. C. MUNCH, A. L. I. WINNE, P. H. DIRSTINE, R. B. ROTHROCK, LYMAN F. KEBLER; A. G. DUMEZ, *President,* A. A. C. P.; CHARLES B. JORDAN, *Chairman,* Executive Committee, A. A. C. P.; H. M. LEROU, *President,* N. A. B. P.; HENRY C. CHRISTENSEN, *Secretary,* N. A. B. P.

UNITED STATES CIVIL SERVICE EXAMINATION.

The United States Civil Service Commission announces open competitive examination for Senior Toxicologist. Applications must be on file with the Civil Service Commission at Washington, D. C., not later than March 13th.

The examination is to fill a vacancy in the Bureau of Chemistry and Soils, Department of Agriculture, and vacancies occurring in positions requiring similar qualifications, for duty in Washinton, D. C., or in the field. The entrance salaries range from $4600 to $5200 a year. Higher-salaried positions are filled through promotion.

The duties are to plan and carry out difficult investigations on the toxicology of metals and other products in foods. This will involve a study of their influence on kidney function, growth, production, composition of blood stream, digestibility, relation to physiological function, and such other methods as will tend to show any difference in the action or utilization of foods when containing such products; the oral and written presentation of the results of these researches before interested groups, and the establishment of contacts with professional workers in this field.

Competitors will not be required to report for examination at any place, but will be rated on their education, training and experience, and a thesis or publication to be filed by the applicant.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or custom house in any city.

NATIONAL HEALTH INSTITUTE.

In addressing the Senate on February 6th, Senator Ransdell, author of the bill providing for the National Health Institute outlined the bill and explained the purposes of the measure by which it is aimed to prevent disease by ascertaining its cause and applying preventive measure in advance of its outbreak. It serves unselfish interest and its beneficent results will enter every home in the nation. The Senator said in part:

"The plan of the institute is to make of it a great coöperative scientific organization in which leading experts in every branch of science will be brought together and given opportunity to work in unison for the purpose of discovering all the natural laws governing human life, and especially to learn those variations of such laws which are detrimental to human health.

"It is confidently believed that if there are brought together in one central place, under one directing head, the very ablest experts in the sciences of medicine, surgery, chemistry, physics, biology, bacteriology, pharmacology, pharmacy, dentistry, etc., and a concentrated, united effort for a term of years is made by them against disease, singling out first the most important maladies, such as cancer, tuberculosis, common cold, pneumonia, etc., that success will result therefrom. While very remarkable and most beneficial efforts have been made in the war against disease by our great medical schools and endowed institutions, there has never been in any one place a combination and concentration of all the branches of science, such as is contemplated in the National Institute of Health."

CHAIN STORE QUIZ SENT TO WHOLESALERS BY FEDERAL TRADE COMMISSION.

The first questionnaire in the chain store investigation has been sent out by the Federal Trade Commission to a large group of wholesale dealers in various lines of trade.

Questionnaires for chain stores and for independent retailers will be sent out in a few weeks, and other types of questionnaires may be prepared later. It was thought advisable to start with the type of information which the wholesaler can supply, as the nature of the investigation is such that data on all phases of merchandise distribution must be obtained. All returns are held in confidence.

PERSONAL AND NEWS ITEMS.

The isolation of the "pituitary twins" (alpha and beta hormones) for which Dr. Oliver Kamm was awarded the annual $1000 prize by the American Association for the Advancement of science, marks another forward step in the science of endocrinology, the study of the ductless glands, the possibilities, by regulating the gland secretions, are held to be almost limitless and varied in possible results. Previous to taking up his research work, Dr. Kamm was an instructor of chemistry at the universities of Illinois and Michigan. He holds three degrees and is the author of many papers and several books on different phases of chemistry. He is a fellow of the American Association for the Advancement of Science, a member of the American Chemical Society, of the Society of Biological Chemists and of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Our fellow member, **Dr. G. G. Colin,** Secretary of the Sociedad Quimica Mexicana (Mexican Chemical Society) reports the election of Dr. M. Gonzales Dela Vega, sub-director of the Testing Laboratory of the National Railroads, as president of the Society, succeeding Dr. Roberto Medellin, former General Secretary of the health department. Dr. Colin is continued as Secretary of the Society.

The AMERICAN PHARMACEUTICAL ASSOCIATION is a constituent member of the American Conference of Hospital Service. The annual meeting of the latter will be held in Chicago, February 19th, and the former will be officially represented.

President David F. Jones, of the A. PH. A. will be a speaker at the February meeting of the Chicago Branch, A. PH. A., on February 22nd.

Charles H. LaWall was delegate of the A. PH. A. at the Minnesota State Pharmaceutical Association meeting. Among others present were **President Jones and E. L. Newcomb.**

Chairman Charles E. Vanderkleed, of the Contact Committee of the American Pharmaceutical Manufacturers' Association, addressed the officials and members of the medical, pharmaceutical and allied professions of Lafayette, Ind., on the subject "Improvement in the Quality of American Drug Products due to Coöperation in the Industry." *Clinical Medicine* comments that "It is only through medical and pharmaceutical coöperation that the greatest advances can be made in conquering disease and improving the health of the American people."

President Charles G. Merrell, of the American Drug Manufacturers' Association, states in the *Oil, Paint and Drug Reporter* that, "from the standpoint of the pharmaceutical manufacturer, the year 1928 was very satisfactory, and the outlook for 1929, so far as we can see into the future, is equally good. Competition will undoubtedly continue keen, but this only stimulates to greater efficiency in sales and advertising, while at the same time maintaining the advances that have been made in the past years in the matter of production. Production costs, in spite of higher wages, have gone down through greater efficiency, and it is believed that distribution costs can also be cut in the same way."

In the same publication **President R. Lincoln McNeil,** of the American Pharmaceutical Manufacturers' Association comments that "the economic changes taking place in the distribution of pharmaceuticals will be successful or not, depending on quality production and increased service to the customer. The laboratories not embraced by mergers either tentative or those already established are more and more becoming specialized in certain lines of pharmaceutical manufacture. By the extension of research work, these plants are producing quality products that are without an equal in the world's markets. This perfection of production coupled with service will enable any laboratory, if it chooses to do so, to outride the sea of mergers."

Edgar A. McCulloch has become chairman of the Federal Trade Commission, succeeding Abram F. Myers. Mr. McCulloch has been a member of the commission since February

1927, prior to which he was chief justice of the Supreme Court of Arkansas.

Dr. A. William Leschohier, assistant to the president, Oscar W. Smith, has been appointed general manager of Parke, Davis & Co., Detroit. He has been with Parke, Davis & Co., since 1909, when he became a member of the research staff. He successively became assistant director of the research and biological departments, director of the department of experimental medicine, and assistant to the president.

Mrs. Frederick Moecker, of Chicago, announces the marriage of her daughter, Bertha Elizabeth Ahern, to Frank Leslie McCartney. **Major McCartney** is Chicago manager of Norwich Pharmacal Company and will be remembered for his pharmaceutical activities in Government service during the war.

Dr. Rodolfo Robles, the discoverer of pseudo leprosy, has received the Brault prize from the Academy of Medicine, Paris, one of the leading scientific awards of the year. His discovery is destined to save thousands from the stigma of world isolation.

Editor Ivor Griffith, who also is chief of the Research Department of John B. Stetson Co., was honored at the Christmas party of the latter organization by being presented with a $5000 paid-up endowment life insurance policy.

G. O. Young, pharmacist at Buchannon, W. Va., has recently issued a volume on "Alaskan Trophies Won and Lost." In announcing the appearance of this book the publishers state: "To read this story is to live the wild free life of mountain and glacier, to sense the grandeur of blazing sunsets and northern lights, to feel the thrill of flowing water beneath the canoe, to climb the crags with the mountain sheep, to see the long pack train wind its way deeper and deeper, to know what it means to win and to lose, and finally, in the losing to find a great adventure."

W. B. Eastman, of St. Johnsbury has been appointed secretary of Vermont State Pharmaceutical Association succeeding the late F. W. Churchill.

Mrs. Josie A. (Wanous) Stuart, member of the A. PH. A since 1897, was the first woman to register in the State of Minnesota by examination as pharmacist. She operated a retail pharmacy in Minneapolis for about thirteen years.

John A. Goode, pharmacist of Asheville, and former president of the North Carolina State Pharmaceutical Association has been elected member of the Board of Directors of the American National Bank of Asheville and also President of the Asheville Chamber of Commerce.

The Dallas News recently gave several columns to a sketch of the activities of **Secretary Walter D. Adams,** of Texas Pharmaceutical Association. Mr. Adams is a retail pharmacist of Forney, Texas, and a former Mayor of his home city.

Marston T. Bogert, of Columbia University, addressed the January meeting of the Virginia Section of the American Chemical Society on "Science and Art in the Perfume Industry."

We are in receipt of a reprint of the thesis presented by Dr. **John C. Krantz, Jr.,** on "Emulsions and the Effect of Hydrogen-Ion Concentration upon Their Stability." This work was in partial fulfilment of the requirements for the degree of Doctor of Philosophy conferred on Dr. Krantz by the University of Maryland.

The widow of Dr. Hideyo Noguchi, has been pensioned by the Rockefeller Institute.

The American Institute of Chemistry announced that its medal for 1929—for worthy and outstanding service, the science of chemistry and the profession of chemistry in America—has been voted to Francis P. Garvan and Mrs. Garvan.

Chairman E. Fullerton Cook, of the U. S. P. Revision Committee, addressed the Rotary Club of Northampton, Pa., January 8th.

Mrs. Charles H. LaWall, member of the A. PH. A., is alumni advisor to women students at the Philadelphia College of Pharmacy and Science. As part of the program of her work, she has arranged for personally conducted tours to prominent museums and libraries, for the girl students. The one for January was to the Museum of the University of Pennsylvania.

Dr. H. C. Wood, Jr., is continuing his work on "The Determination of the Water Solubility of Volatile Oils."

As part of the exchange lecture program, Dr. H. V. Arny, of Columbia University College of Pharmacy, gave a lecture at the Philadelphia College of Pharmacy and Science, on January 22nd.

F. R. Peterson was the principal speaker at the annual meeting of the Portland Retail Druggists Association held January 17th.

Frank Nau has been reëlected president of the Portland Retail Druggists' Association. In a radio talk, as part of the program of the

Portland Chamber of Commerce, Mr. Nau spoke on "The Use of the Fever Thermometer."

Herschel W. Cummins, secretary of Idaho Pharmaceutical Association advises that Donald Whitehead, pharmacist of Boise, has been elected speaker of the Idaho House of Representatives.

W. L. Pattiani is president of the San Francisco Veteran Druggists' Association and **W. Bruce Philip** is the secretary.

Dr. Arthur D. Holmes, director of the Research Laboratory of the E. L. Patch Co., has been appointed chairman of the Dietetic Section in the Scientific Division of the Fisheries Association. One of the accomplishments of this Committee during the past year has been the survey of the cod-liver oil industry, with a view to standardizing trade names and trade practices.

William E. Weiss, vice-president and general manager of Drug, Inc., is visiting in Honolulu, accompanied by Mrs. Weiss, their daughter and a niece.

Clyde L. Eddy, member of AMERICAN PHARMACEUTICAL ASSOCIATION, navigator of the Canyon of the Colorado, delivered an illustrated lecture under the auspices of The American Scenic and Historic Preservation Society, in the Auditorium of the American Museum of Natural History, New York, January 15th. There was an overflow attendance. Mr. Eddy also lectured this winter at the Institute of Arts and Sciences at Columbia University and the Institute of Arts and Sciences, at the Brooklyn Academy of Music. He is now working on a book that is scheduled for publication early in the fall—"Down the World's Most Dangerous River."

Clarence O. Bigelow, well and favorably known pharmacist and member of the A. PH. A., is president of West Side Savings Bank, New York City. Their new building will be opened to the public for inspection February 21st.

Secretary Roy C. Reece, of Kansas Pharmaceutical Association, is enlisting the support of Kansas druggists to defeat the so-called "Luxury Tax." Cosmetic legislation is being presented in a number of state legislatures.

J. Leon Lascoff is preparing an article on a drug store library. He states that the following list of books which should be part of the drug store library: *U. S. P. (Always the latest edition), National Formulary, Vols. III, I V and V, Recipe Book of the A. Ph. A., a Dispensatory (Hare, Caspari & Rusby's or Wood & LaWall's), Arny's Principles of Pharmacy, Squire's Companion to the British Pharmacopœia, Condensed Chemical Dictionary, Hager's Handbuch, Vols. I, II and III, Ruddiman's Incompatibilities in Prescriptions, Scoville's Art of Compounding, Dieterich's Neues Pharmazeutisches Manual, Treatise on Pharmacy, Caspari-Kelly, Polyglot Pharmaceutical Lexicon of Drugs, Chemicals and Pharmaceutical Products with Their Synonyms, A. M. A.'s New and Nonofficial Remedies, Brundage's Manual of Toxicology, LaWall's Four Thousand Years of Pharmacy, Remington's Practice of Pharmacy, Robinson's Latin Grammar of Pharmacy and Medicine, Cushny's Pharmacology & Therapeutics, Gardner's Chemical Synonyms and Trade Names.*

William J. Schieffelin was reëlected head of the American Mission to Lepers.

Albert N. Doerschuk, of Kansas City, is giving good publicity to the need of legislation which will place the sale of all drugs in the hands of competent pharmacists, thereby safeguarding the health and life of the people.

Dr. J. H. Wurdack spoke before Pittsburgh Branch A. PH. A., at the January meeting, on the periodic chart of the atoms, as compiled by Henry D. Hubbard, of the U. S. Bureau of Standards.

Wilhelm Bodemann advises that the late T. N. Jamieson is survived by two sons. In the sketch of the JOURNAL mention was made of only one son.

We acknowledge with appreciation, receipt of a beautiful calendar and New Year greetings from Editor, Mrs. and Miss Gilmour. Mr. Gilmour is editor of the *Journal and Pharmacist,* Great Britain.

President W. H. Saunders, of Vermont Pharmaceutical Association, advises us of the appointment of **Welcome B. Eastman** as secretary of the State Association, succeeding the lamented F. N. Churchill, who died December 15th.

Dr. and Mrs. A. R. Bliss met with a serious accident while in New York City, in attendance at the meeting of the American Association for the Advancement of Science, December 29th. Dean and Mrs. Bliss were in a taxi on their way to attend the annual Association dinner, when the taxi ran into a pillar with such force that in the rebound the machine struck an auto. Mrs. Bliss was quite seriously injured and Dr. Bliss received minor injuries; both were disabled and could not return to Memphis until February 8th; they are, however, getting along nicely.

OBITUARY.

WILLIAM HENRY ROGERS.

William H. Rogers—veteran pharmacist of Middletown, N. Y., member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1869—died at his home January 24th, aged 83 years. He was one of the signers of the Incorporation Certificate of the A. PH. A., as a member of the Council.

Mr. Rogers was born at Cook's Falls, December 29, 1845. He entered business as a partner of D. C. McMonagle; retiring from the business several years ago, and was succeeded by his son, Fred S. Rogers, who with another son, Thomas C. Rogers and a daughter, Mrs. W. W. Young, survive the deceased.

Although during a decade impaired vision kept him from attending association meetings, his interest continued; he developed a philosophy which found expression in an optimism that radiated to all who came in contact with him. He was Chairman of the Council, A. PH. A., in 1887–1888; one of the organizers of New York State Pharmaceutical Association and its president in 1885.

It may well be said of Mr. Rogers, that he was a man of sterling qualities, esteemed by the citizens of his home city and state and the recipient of many honors from them. A sketch appeared in the JOUR. A. PH. A., for August 1926, page 621.

DAVID WILFONG RAMSAUR.

David Wilfong Ramsaur, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1902, and vice-president and general manager of Groover-Stewart Drug Co., Jacksonville, died, January 18th, aged fifty years.

Mr. Ramsaur graduated from the Philadelphia College of Pharmacy and Science in 1902. Immediately after graduation he became associated with the Ackerman-Stewart Drug Co. and continued as manager until 1917 when he joined the Groover-Stewart Drug Co. at Jacksonville.

Mr. Ramsaur was a member of the Florida State Board of Pharmacy 1902–1917. During the latter decade of this membership he was secretary of the Board, and during the year of 1915 to 1916 he was vice-president of the National Association of Boards of Pharmacy. In 1906–1907 he was president of the Florida State Pharmaceutical Association.

The deceased was active in the social and fraternal life of Jacksonville, and a deacon of the Riverside Presbyterian Church. His widow and two daughters survive. The retail druggists of Jacksonville closed their stores during the time of the funeral as a mark of respect.

CHARLES A. OATS.

Charles A. Oats—Member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1917, pharmacist at 9th Ave. & 46th St., New York City—died January 10th, of pneumonia. He was recording secretary of the New York Retail Druggists' Association for four years, and a former secretary of the New York Pharmaceutical Conference.

Paul Gerson Unna, honorary professor of dermatology at the University of Hamburg, Germany, died January 29th, aged 78 years. He was a recognized authority on histology of the skin and the bacteria associated with a number of skin diseases. He initiated the study of diseases of the skin by diascopy in 1883, and in 1894 published "Die Histopathologie der Hautkrankheiten." His name is well known to pharmacists in connection with preparations for external use in treatment of the skin, as ointments, pastes, pencils, etc.

Dr. Thomas Burr Osborne, chemist and research specialist in the field of nutrition, died January 29th, at his home in New Haven, Conn. He was Associate Editor of the *Journal of Biological Chemistry*. Dr. Osborne was awarded a medal in Paris, in 1900, and the John Scott medal of Philadelphia, in 1922; the Thomas Burr Osborne medal was established in his honor, in 1926.

The death is announced of **Prof. H. Imbert,** for more than forty years attached to the Montpellier faculty of pharmacy as preparateur, head of laboratory and professor of toxicology and chemical analysis.

President Robert Lincoln Slagle, of the University of South Dakota since 1914, died January 30th, while on a train near Indianapolis. He received his degrees at Lafayette and Johns Hopkins and was a former president of the South Dakota School of Mines.

SOCIETIES AND COLLEGES.

GOLDEN ANNIVERSARIES.

The earliest of Golden Anniversary celebrants is the Iowa State Association, held February 12th–15th. In connection therewith the "Great Northwest Drug Show" was held at the Memorial Coliseum, Cedar Rapids. Kansas holds forth in Topeka, April 16th–18th; Illinois, New York, North Carolina and Texas celebrate in June.

DATES AND MEETING PLACES OF ASSOCIATIONS.

Washington State Association meets in Seattle, June 19th–21st. Nebraska has changed its meeting place from Grand Island to Lincoln. Please consult the roster in the Advertising Section, and advise us of changes that may be necessary.

MINNESOTA PHARMACEUTICAL ASSOCIATION.

Among the speakers at the Minnesota Pharmaceutical Association, in St. Paul, February 6th–8th, were the following: Charles H. LaWall, dean of the Philadelphia College of Pharmacy and Science; Stanley L. Krebs, president of the New York Institute of Mercantile Art (two addresses); Edwin L. Newcomb, secretary of the National Wholesale Druggists' Association; Jay A. Myers of the University of Minnesota, Head of the Department on Preventative Medicine and Public Health; C. Frolich, general manager of the United Drug Co. (Boston); S. C. Henry, secretary of the National Retail Druggists' Association.

Former president of the A. PH. A., Charles H. LaWall, represented the A. PH. A., as delegate; President David F. Jones also attended the meeting.

NEW JERSEY MID-WINTER SESSION.

Secretary Robert P. Fischelis advises that approximately 150 members and guests attended the Mid-Winter Meeting and Dinner-Dance of the New Jersey Pharmaceutical Association at the Stacy-Trent Hotel, Trenton, N. J., on Tuesday, January 29th. Business sessions were held in the morning and afternoon, and the Dinner-Dance wound up one of the most interesting and sociable sessions that this Association has held in its long career of more than 58 years.

ALAMEDA COUNTY PHARMACEUTICAL ASSOCIATION SPONSORS WEEKLY LUNCHEONS.

San Francisco has demonstrated the value of weekly luncheons. At a recent luncheon there were present—Secretary Ralph W. Colburn, of Southern California Retail Druggists' Association; Editor Fred Felter, of Pacific Drug Review; Secretary John Culley, of Utah Pharmaceutical Association.

OFFICERS OF THE NEW YORK RETAIL DRUGGISTS' ASSOCIATION.

The following officers were elected at the annual meeting of the New York Retail Druggists' Association held in December: *President*, Samuel Schoenfeld; *First Vice-President*, A. Katzman; *Second Vice-President*, L. G. Gitlin; *Third Vice-President*, Nathaniel Levy; *Treasurer*, J. A. Klein; *Financial Secretary*, S. Chazkin; *Recording Secretary*, M. Stiedeitz; *Corresponding Secretary*, S. A. Goldstein.

CENTENARY OF THE COLLEGE OF PHARMACY OF THE CITY OF NEW YORK.

The College of Pharmacy of the City of New York (the Pharmacy School of Columbia University), founded in 1829, plans to celebrate its 100th Anniversary on June 3rd and 4th next.

There will be a reception at 11 o'clock on the morning of June 3rd, with an address, in the main lecture hall of the College Building, by President Nicholas Murray Butler.

After the reception, there will be an Alumni luncheon at a nearby hotel, after which Professor Curt P. Wimmer will deliver an illustrated lecture on the history of the institution.

At 8 P.M., there will be a banquet, at which those upon whom honorary degrees in pharmacy are to be conferred at the University Commencement on the following evening, will be entertained.

The forenoon and part of the afternoon on June 4th will be devoted to a visit, under the auspices of Dr. Charles Christian Lieb, to the new Medical Center, where luncheon will be served. At 6 P.M., on that day, the Columbia University Commencement Exercises will be held.

Exhibits, illustrating the differences in methods and the advancement in the profession of pharmacy during the past one hundred years, are being arranged for and some interesting material is promised.

Alumni, and other friends of the College are asked to communicate with Mr. W. B. Simpson, the secretary of the Centennial Committee, so that the mailing lists may be revised in preparation for the mailing of invitations, etc.

SCHOOL AND COLLEGE PROMOTIONS.

Governor Ritchie has recommended to the Legislature an appropriation of $100,000 to provide the necessary equipment for the Medical, Dental and Pharmacy Schools of the University of Maryland.

Founders' Day of the 91st session of the Medical College of Virginia was observed February 15th. Dr. Joseph L. Miller, historian and bibliophite spoke on "Physicians of the Old South—Their Character and Education."

Baylor University observed Founders' Day February 1st—the 84th anniversary. Among the speakers were President Brooks and Dr. E. H. Cary. A million dollar campaign for the Medical, Dental, Pharmacy and Nurses Schools is under way.

Philadelphia College of Pharmacy and Science will celebrate Founders' Day February 22nd, with an address by Emory R. Johnson and conferring honorary degrees. This is the 108th anniversary.

The University of Wisconsin plans to develop an arboretum along the shore of Lake Wingra at Madison, where plants and game native to Wisconsin will be conserved. Through the efforts of the regents of the university, and others interested in the project, the acquirement of land for the project has begun. Plans may later be extended to include development of a unique laboratory and outdoor museum of wild life.

Massachusetts College of Pharmacy is doing excellent work in compiling sketches of its alumni. The usual very brief references serve a very good purpose, but do not afford the opportunity for personal touches and information given by those being prepared by Massachusetts College.

DEAN WULLING SUGGESTS AUTO RESOLUTIONS.

Dean Wulling is continuing his work for public safety, and the *Minneapolis Journal* recently commented on his good work and published the resolutions recommended by the Dean; five of them follow:

"I will approach all intersections prudently, and obey all Stop and Slow signs. I will not "fudge" at semaphored crossings.

"I will always drive at such a speed, and with my car under such control, that I can come to a full stop within whatever open space is visible ahead of me.

"I will yield the right of way (as required by law) to the pedestrian who is already on the crosswalk, to the crossing motorist who is already in the intersection, and to the driver signaling for a left hand turn.

"I will keep my brakes and headlights properly adjusted at all times.

"I will be as considerate of the other driver's rights, and the pedestrian's rights, as I expect them to be of my rights."

VETERAN DRUGGISTS' ASSOCIATION ROSTER.

Dean Willis Gregory, of the Buffalo College of Pharmacy, in attendance at the 6th anniversary meeting of the New York Veteran Druggists' Association suggested that a roster be published of the V. D. A.'s, together with meeting dates. Thereby veterans will be advised and may arrange their visits to correspond with the meetings. If the plan meets with favor the JOURNAL will gladly add such rosters to those appearing in the publication each month.

The New York Veterans elected the following officers: *Honorary President*, Henry H. Rusby; *President*, Robert R. Lampa; *Vice-President*, George Christ; *2nd Vice-President*, David Costelo; *3rd Vice-President*, Charles F. Keale; *Secretary*, Robert S. Lehman; *Treasurer*, J. Leon Lascoff. *Executive Committee:* Adrian Paradis, H. V. Arny, William C. Anderson, Nathaniel Nicolai.

Baltimore Veteran Druggists' Association celebrated the birthdays of Charles C. Neal and Robert E. Lee Williamson at its January meeting; both deported themselves admirably and gave a good account of themselves in very interesting sketches. Retiring President Morgan looks back upon a year of pleasure and success, although part of his tenure of office was interfered with by illness, from which he is recovering. His interest in the B. V. D. A. assures the members of his presence at the monthly meetings. A vote of appreciation was given him. The newly-elected president is

E. G. Eberle; the other officers have been re-elected; namely, *Secretary*, Dr. A. G. DuMez; *Treasurer*, Charles C. Neal; *Sergeant-at-Arms*, E. F. Kelly.

OFFICERS OF BALTIMORE DRUG EXCHANGE.

The following were elected officers of Baltimore Drug Exchange for 1929: *President*, Horace Burrough, Jr.; *First Vice-President*, P. I. Heuisler; *Second Vice-President* and *Secretary*, William J. Lowry, Jr., *Treasurer*, J. Emory Bond; *Executive Committee:* F. P. Wohnlich, John C. Muth, James Carey and Wm. Graham.

OFFICERS OF PHILADELPHIA DRUG EXCHANGE.

The following officers and directors were elected by Philadelphia Drug Exchange for the ensuing year: *President*, Herbert R. McIlvaine; *Vice-President*, John F. Belsterling; *Secretary*, Joseph W. England; *Treasurer*, A. L. Hilles, Jr.; *Board of Directors:* C. Mahlon Kline, Horace S. Felton, Benjamin S. Thorp, H. K. Hineline, Harrison S. Hires, F. L. Godman, Walter V. Smith, Alexander C. Fergusson, Jr.

KAPPA EPSILON.

NATIONAL PHARMACEUTICAL SORORITY INSTALLS CHAPTER.

In 1921, representatives from local organizations of women students in the colleges of pharmacy of the Universities of Minnesota, Nebraska and Iowa met at Iowa City and organized Kappa Epsilon, a national pharmaceutical sorority. The constitution and by-laws adopted at that time limit extension to colleges that are members, in good standing, of the American Association of Colleges of Pharmacy. There are specific requirements also about the quality of work that individual members shall do.

There have been opportunities for extension into schools that are not members of the Association, but the council has seen no reason for advising a change in the by-laws. The number of chapters is of far less importance than the standing of the school and the quality of the membership. So, though growth has not been rapid, it has been satisfactory.

On the evening of November 30, 1928, Eta Chapter was installed at Western Reserve University, Cleveland, Ohio, by Grand President Naomi Kenefick. The installation took place at the home of Dean and Mrs. Edward Spease following a dinner there. Six women students of the College were initiated: Mildred Pirson, Ruth Pirson, Emma Pejsa, Lucille Bickford, Wanda Baygrowitz and Ruth Kotershall. Mrs. Spease and Mrs. Harris, instructor in English in the College of Pharmacy, have been honorary members of the local organization and will shortly be formally received as associate members of the new chapter. There will be initiation for a number of alumnæ early in the new year. Officers of the Chapter are: *President*, Emma Pejsa and *Secretary-Treasurer*, Mildred Pirson.

A gavel bearing a silver plate with the inscription "Presented to Eta Chapter of Kappa Epsilon Nov. 30, 1928 by Naomi Kenefick, Grand President," was Miss Kenefick's gift to the new chapter.

There are seven active and one alumnæ chapters located as follows:

Alpha—University of Minnesota, Minneapolis.
Beta—University of Nebraska, Lincoln.
Gamma—University of Iowa, Iowa City.
Delta—University of Montana, Missoula.
Epsilon—Ohio State University, Columbus.
Zeta—University of Wisconsin, Madison.
Eta—Western Reserve University, Cleveland.
Alpha Alumnæ—Minneapolis.

National officers are: *President*, Naomi Kenefick, Gamma, Eagle Grove, Iowa; *Vice-President*, Mrs. Frieda Consigny, Zeta, Madison, Wisconsin; *Secretary*, Mrs. Jeanette Christgau Douglass, Alpha, Plainview, Minnesota; *Treasurer*, Mary Hunt, Epsilon, Carrollton, Ohio; *Historian*, Mercedes Anderson, Alpha, Minneapolis, Minnesota. Zada M. Cooper, Gamma, Iowa City, is *Chairman* of the Extension and Investigating Committee and *Editor* of the "Bond," which is issued three times during the school year.

RHO CHI, NATIONAL HONORARY PHARMACEUTICAL SOCIETY.

It is well for those who are interested in pharmaceutical education to consider the significance of Rho Chi, honorary pharmaceutical society. There are at least four points by which it justifies its existence: it is a means of recognizing superior scholarship; it helps in establishing fraternal relations among the scholarly members of all colleges represented; it is an incentive to excel for the sake of obtaining the honor; it helps to promote the science and the art of pharmacy.

The custom of recognizing in some way the individual who outranks his fellows goes far back in history and has taken many forms. Honorary societies, as only one of these forms, have grown in numbers and in strength until now every calling has such a society. That Rho Chi is making a place for itself cannot be doubted. Election to membership is, in some ways, the highest honor which a college can bestow.

Within the year, charters have been granted to three new chapters: Iota, College of Pharmacy, University of Florida; Kappa, North Dakota Agricultural College, School of Pharmacy; Lambda, Medical College of Virginia, School of Pharmacy. These colleges are all members in good standing of the American Association of Colleges of Pharmacy.

The roll of chapters with locations is as follows:

Alpha—University of Michigan, Ann Arbor.
Beta—Oregon Agricultural College, Corvallis.
Gamma—University of Oklahoma, Norman.
Delta—State University of Iowa, Iowa City.
Epsilon—State College of Washington, Pullman.
Zeta—Alabama Polytechnic Institute, Auburn.
Eta—University of Wisconsin, Madison.
Theta—University of Southern California, Los Angeles.
Iota—University of Florida, Gainesville.
Kappa—North Dakota Agricultural College, Fargo.
Lambda—Medical College of Virginia, Richmond.

The officers of the grand chapter are: *President*, E. J. Traut, Battle Creek, Mich.; *Vice-President*, F. D. Wood, Morgantown, West Virginia; *Secretary*, Clifford C. Glover, Ann Arbor, Mich.; *Treasurer*, J. L. Powers, Ann Arbor, Mich.

Prof. B. V. Christensen has sent us an interesting account of the formal organization and initiation ceremonies of Iota Chapter at the University of Florida, on December 6th. Impossibility, on account of lack of space, to print is regretted. Professor Christensen presided as toastmaster, initiation ceremonies were conducted by Dr. P. A. Foote and Dr. W. J. Husa delivered the charge to the initiates. H. W. Werner had charge of the initiation of officers. He outlined the duties of each and then administered the oath of loyalty and fidelity. The officers are: *President*, O. B. Lewis; *Vice-President*, L. E. Arnow; *Secretary*, C. J. Lee; *Treasurer*, B. V. Padgett; *Councillor and Alumni Secretary*, A. D. Welch.

LEGAL AND LEGISLATIVE.

PHARMACY CORPS IN THE U. S. ARMY.

Reference was made in the January number of the JOURNAL A. PH. A. to the Bill for a Pharmacy Corps in the U. S. Army—introduced by Congressman Clyde Kelly in the House and Senator Royal S. Copeland in the Senate. The number of the former is No. H. R. 16278 and latter, 5406. The Bill amends the National Defense Act by providing for a Pharmacy Corps in the Medical Department, United States Army, and reads:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Section 10 of the Act entitled "An Act for making further and more effectual provisions for the national defense," approved June 3, 1916, as amended, be amended by the addition of the following.

"*Provided*, That on and after July 1, 1929, there shall be officers and enlisted men as now authorized by law except that in addition thereto there shall be permanently established as a component part of the Medical Department of the Regular Army, a Pharmacy Corps to consist of forty pharmacists and chief pharmacists, the latter to be assigned to United States Army general hospitals, station hospitals of one hundred-bed capacity, Army general dispensaries of one thousand-patient allowance, and such other medical organizations as the War Department may direct, as pharmacy officers: *Provided further*, That pharmacists shall have the rank, pay and allowances of first lieutenant, and chief pharmacists shall have the rank, pay and allowances of captain, except that chief pharmacists who have served for a period of sixteen years as an officer in the Pharmacy Corps of the Regular Army shall have the rank, pay and allowances of major. Pharmacists shall be promoted to chief pharmacists upon completion of four years' service in the Pharmacy Corps of the Regular Army: *Provided*, That vacancies in the rank of pharmacists in the Pharmacy Corps of the Regular Army created by this Act shall be filled in the following manner and from the following classes of eligibles only, who, at time of appointment, must be duly registered as pharma-

cists (as distinguished from junior pharmacists, and so forth) in one or more States of the United States of America or District of Columbia as the result of having passed a scheduled written and practical examination held by the board of pharmacy of such State or District not more than five years previous to date of appointment:

"(*a*) Appointments prior to December 31, 1932: Pharmacists commissioned prior to December 31, 1932, shall be selected from among the noncommissioned officers of the first three grades of the Medical Department under forty-five years of age who can complete thirty-two or more years of military service before reaching the age of sixty-four years, who have demonstrated their fitness for promotion to the rank of pharmacist by at least four years' satisfactory service as a practical pharmacist in an Army pharmacy of a one hundred-bed hospital or larger military pharmacy, two years of which must have been in the capacity of noncommissioned officer in charge of such a pharmacy and served during the four years immediately prior to date of appointment. Officers of the Pharmacy Corps shall be entitled to count for purpose of computing longevity pay all service rendered in the Medical Department of the Regular Army in a grade higher than that of sergeant, but shall not be entitled to count service as a noncommissioned officer of the first three grades for purpose of promotion in rank: *Provided further*, That not more than 40 per centum of the total vacancies created by this Act shall be filled prior to January 1, 1933.

"(*b*) Appointments subsequent to December 31, 1932: Pharmacists commissioned in the Pharmacy Corps of the Regular Army on and after January 1, 1933, shall be selected from graduates of a four-year course in a recognized college of pharmacy, and in addition thereto shall be duly registered as a pharmacist by examination as herein prescribed, and must be under thirty-five years of age on date of appointment. The manner of selecting and passing upon the suitability of candidates for commission as pharmacists in the Pharmacy Corps of the Regular Army on and after January 1, 1933, will be similar to the policy followed at that time for obtaining medical, veterinary and dental officers: *Provided further*, That nothing in this Act shall be so construed as to prevent the appointment in the Pharmacy Reserve Corps, for duty in time of emergency only, of a suitable number of registered pharmacists as pharmacists or chief pharmacists, such number to be determined by the War Department, by and with the recommendation of the Surgeon-General, United States Army.

"In addition to the military forces now authorized by law, there is hereby authorized to be formed, beginning July 1, 1929, an enlisted section of the Pharmacy Corps to be known as the Medical Department (pharmacy section), same to be under the direct administration of the Pharmacy Corps and to consist of fifteen master sergeants, forty-eight technical sergeants, forty staff sergeants, forty-eight sergeants, and forty-nine privates first class, who, when deemed sufficiently qualified, may be rated specialists third class—pharmacists' apprentice: *Provided*, That this pharmacy section shall be organized in five equal annual increments, under the direction of the Surgeon-General, United States Army, with the approval of the War Department. Noncommissioned officers of the Medical Department (pharmacy section) will be appointed by the Surgeon-General, United States Army, only as a result of their having passed a satisfactory written and practical examination (competitive in the case of the first three grades), in such strictly pharmaceutical subjects and military subjects, as will best serve the requirements of the Medical Department. The duty of the Medical Department (pharmacy section) will be to assist the pharmacy officers in the larger military pharmacies, and to meet the pharmacy requirements for the one hundred and thirty, or more, smaller military pharmacies at which no pharmacy officer is stationed. They will be specially trained in their pharmacy duties under immediate supervision of pharmacy officers, and in such special duties as anesthetists, X-ray technicians, laboratory assistants, and so forth, as the Surgeon-General of the Army may direct, so as to be of most value to the military service wherever stationed: *Provided*, That any and all Acts in conflict with this Act be, and hereby are, amended to accord with this Act."

REPORT TO CONGRESS BY FEDERAL TRADE COMMISSION ON RESALE PRICE LEGISLATION.

In a volume of two hundred pages the Federal Trade Commission transmitted to Congress January 30th a report on its resale price economic inquiry. In its letter of transmittal the Commission stated that the report will be supplemented by a second volume conveying

statistical data collected in its investigation.

While the Commission in this report disclaims declaration of conclusions, nevertheless its definite convictions on certain points are disclosed. Following recital that resale price control can be effected by manufacturers' owning and operating their own retail outlets, or by consignment or other form of direct agency, the letter of transmittal states:

"Under these methods of price-control just mentioned the manufacturer continues to be the owner of the goods and has the responsibilities of ownership, which naturally includes the power to fix the ultimate selling price. There are evident advantages to consumers where this is the situation, because responsibility for the condition and quality of the goods, and for auxiliary service in connection with their use, is definite and is presumably placed upon a concern which has generally greater financial means and technical ability and one to which 'good will' in the literal sense of the term, is an especially important and permanent asset. There may be disadvantages to consumers if the manufacturer is unable to secure adequate distribution, assuming the products are of superior quality or have value in stimulating competition.

(Mention is not made, possibly because the fact is obvious, that above methods of present legal price control are enormously expensive and constitute uneconomic tax on consumer who must pay in the end.)

"THE VAN CAMP DECISION."

The Supreme Court of the United States on January second, held that Section 2 of the Clayton act prohibits discrimination in prices by the seller where it tends to create a monopoly for a buyer or a seller.

The decision of the Supreme Court in the "Van Camp case" construes the Clayton act to prohibit discrimination in prices in any line of interstate commerce where the effect is to lessen competition, or tends to create a monopoly. In the case in question, as we understand it, the American Can Company sold its cans to the Van Camp Packing Company at 20 per cent lower than to the George Van Camp & Sons Company, and furnished its sealing device to the former free of charge, while it exacted a rental charge from the latter. It also gave the Van Camp Packing Company the benefit of bonuses and other alleged concessions which it denied the George Van Camp & Sons Company. The Supreme Court declared such discriminations unlawful when made against purchasers in any line of interstate commerce.

STORES MUST BE UNDER SUPERVISION OF LICENSED PHARMACIST.

Drug store operators throughout Alabama have been warned to be careful in their compliance with the Alabama pharmacy law which requires that all drug stores in the state be under the direct supervision of a licensed pharmacist. The warning is issued by Dr. H. M. Robertson, supervisor of agricultural chemistry of the state department of agriculture, who has charge of the enforcement of the law.

Dr. Robertson in his warning sent out to the pharmacists throughout the state cited five cases of recent date in which proprietors of drug stores were fined for violation of this act.

LEGISLATIVE BILLS INTRODUCED.

NEW YORK COSMETIC LABEL BILL.

Under the provisions of a bill introduced in the New York Assembly January 31st by Edward P. Doyle, Brooklyn, the public health law is amended by adding a new section 335 providing that no cosmetic preparation to be used as a hair dye, hair tonic, dye remover, face bleach, face cream, face powder, rouge, mouth wash, toilet water, or depilatory for external application for the purpose of beautifying, embellishing, cleansing, perfuming, or conditioning the hair, scalp, eyes, nails, or the skin of the face, ears, neck, bust, arms, or hands of the human body shall be distributed unless it contains a label stating "The formula from which this preparation is made contains no arsenic, lead salts, lead mixture, paraphenylenediamine, paratoluene diamine, paraphenyldiamine, anilin derivatives, bichloride of mercury in excess of two per cent, mercury or any compound of mercury except calomel, or phenol in excess of ten per cent by weight in a fatty or other solid of semisolid base, or in excess of three per cent by weight in any solution." The bill is modeled after a measure also introduced in Congress.

SALE OF PROPRIETARY MEDICINES.

Massachusetts House Bill 713 prohibits the sale of a patent or proprietary medicine containing more than 6 per cent of alcohol, except upon prescription.

REGULATING SALE OF SPECTACLES.

Colorado House Bill 362 makes it unlawful for spectacles or lenses for the correction of

vision to be sold unless a duly qualified licensed physician or licensed optometrist is in attendance.

MEDICAL ATTENTION FOR CHILDREN.

Oklahoma Senate Bill 18 provides a penalty for any parent who wilfully omits to furnish medical attention for a child. House Bill 37 imposes a special privilege tax of 10 per cent on the sale or distribution of tobacco and cosmetics. House Bill 56 penalizes the sale of adulterated foodstuffs.

PENSION FOR MRS. GOLDBERGER.

S. 5473, introduced by Senator Ransdell, Louisiana, proposes a pension of $150 a month to the widow of Dr. Joseph Goldberger.

BILLS IN GENERAL.

Several states are considering amendments to pharmacy laws. Cosmetic legislation is the subject in a number of Legislatures; also sales of proprietary remedies; of spectacles. Narcotic legislation is also receiving attention by Congress and State legislatures.

The California Vocational Standard Bill has been amended and divided into two divisions: Division One will consist of Medical, Dental, Pharmacy, Optometry and Veterinary Boards. Division Two will consist of all other Boards as given in the Vocational Bill.

BOOK NOTICES AND REVIEWS.

Kraemer's Scientific and Applied Pharmacognosy. Revised by E. L. NEWCOMB, P.D., Ph.M., Phar.D., Secretary National Wholesale Druggists' Association, Chairman U. S. P. and N. F. sub-committees on Botany and Pharmacognosy, and formerly Professor of Pharmaceutical Botany and Pharmacognosy and Director of Medicinal Plant Garden at the University of Minnesota; L. K. Darbaker, Phar.D., Professor of Microscopy, Histological Pharmacognosy and Microbiology at the University of Pittsburgh; E. B. Fisher, B.S., Professor of Pharmaceutical Botany and Pharmacognosy and in charge of the Medicinal Plant Gardens at the University of Minnesota; E. N. Gathercoal, Ph.G., Professor of Pharmacognosy at University of Illinois, Member of the U. S. P. sub-committee on Botany and Pharmacognosy. Third edition, revised and illustrated with more than 400 plates. Octavo xxxvii + 893 pages. New York, John Wiley & Sons, Inc. Price $7.50.

The revised edition of "Kraemer's Scientific and Applied Pharmacognosy" will receive a warm welcome from all who may be interested in any phase of pharmacognosy; the revision gives to its readers information from some of our well-known American pharmacognosists.

In this edition, the printed page is broken by placing the official name of the drug apart from the treatise on it. This makes for greater ease in reading as well as for better appearance of the page. Another convenience is the use of heavy-faced type for the synonyms in the introductory paragraph of every drug discussed. In the arrangement of the material, there are, however, a few instances in which order was not strictly followed. There seems to be no excuse for separating Arnica Flowers from Arnica Root by several other drugs, when in all other instances drugs derived from the same plant are treated in direct succession. In connection with the members of the *Leguminosæ* family, all drugs have been placed in a sub-family with the exception of Baptisia, which failed to receive a sub-classification for no apparent reason. "Spermatophytes" appears in the table of contents, but does not appear as a title on the page indicated.

Some of the lesser important families have been dropped from the new edition, making way for the information on such drugs of recent development and importance as Ephedra.

It is pleasing to see that in this edition the specific, generic and family names have been printed in italics which is in conformity with the regulations on the printing of botanical names. It is to be regretted, however, that the plant author's name has been omitted, as that would clinch without a doubt the botanical origin of the drug described. There have been several such embarrassing situations in the past, the most commonly known one being that of *Prunus virginiana* Miller and *Prunus virginiana* L.

The introductory chapter has not been revised to a great extent, except for the inclusion of several elegant plates on cleaning and curing of drugs, which are photographs of the equipment in the laboratories of the University of Minnesota. This chapter again, as in the previous edition, calls attention to the broad field of pharmacognosy, its possi-

bilities, and the necessary academic training to successfully master this branch of pharmacology. Many definitions relative to the various factors of drug are given in this chapter.

The body of the work is concerned with a consideration of official and non-official drugs, although there is no indication to distinguish between them. Such a distinction would be extremely valuable, particularly if the book is intended for use as a textbook. Engler and Prantl's natural arrangement is again followed in the systematic treatment of the drug plants. There is a brief description of the characteristics of each family, but no description of the species characters of the drug plants. Relative to each drug, there is an introductory paragraph which lists the English title and synonyms and states the definition of the plant part used. The etymology of the botanical names is recorded in most instances. This is a most interesting addition to this edition. Occasional references are made to commercial varieties and methods of collection and curing of drugs. Concerning the synonyms, too much emphasis cannot be placed upon them from a practical viewpoint, and yet in several cases, this phase of the book is not sufficiently thorough; *e. g.*, no synonym is listed for Belladonna, Chirata and others.

Following this first paragraph, there is a description of the drug—both macroscopical and microscopical; this is followed by a list of constituents, uses and doses, allied plants, adulterants, standards of purity and finally the literature relative to the drug.

The addition of "Standards of Purity" and "Uses and Doses" adds greatly to the value of the book. There is, however, one unfortunate circumstance in connection with the "Standards;" many of the drugs, for which there is a U. S. P. or N. F. purity rubric, have none such listed in this book. Examples of such instances may be found in Peppermint, Hydrangea, Euonymus and others. There are a few drugs for which no ash standard is listed. It is also unfortunate that in many instances the definition of the drug does not coincide with the U. S. P. or N. F. definition; such drugs as Blue Flag, Iris, Trillium, Senna and Cypripedium are illustrations of this point.

In regard to adulterants, the field is very well covered, but it was much of a surprise to the reviewer to find that so common an adulterant as *Aralia spinosa* L. was not listed with the adulterants of Northern Prickly Ash Bark.

There is an increase in the number of plates, all of which are good, particularly those made from drawings. The plates on "Starches" have been greatly improved by using a double page instead of crowding all of the drawings on one page as in the previous edition.

The increase in Literature References is also a factor to be appreciated. There are a few instances where the references are rather meagre, and in the case of Tonga, which is a new addition to the N. F., there is no reference. Concerning Tonga, the general treatise of the drug is very limited, failing to give even such information as geographical source. Nor is any mention made of Tonga when describing members of the Arum family; this should have been stated as 50% of Tonga belongs to the Arum family.

The last division of the book gives a treatise on powdered drug followed by an analytical key for identification. The key is built upon histological characters and is far superior to that key of the 2nd edition. Much credit is due to Prof. E. H. Wirth for drawing up so splendid a key.

The volume, despite a few of the abovementioned criticisms, retains its envied position among the few worth while American books on pharmacognosy. It possesses an abundant supply of drug information in a well-arranged and well-printed form and should prove a worth while addition to the library of any scientist interested in drugs.—A. John Schwarz.[1]

Grundriss der Arzneimittellehre für die Behandlung von Hautkrankheiten, "Handbook of Materia Medica for Treatment of Skin Diseases." By Dr. Kurt Furst. Georg Thieme, Book Notices and Reviews, Verlag, Leipzig, 1928.

This little handbook consists of one hundred and forty-four pages and purports to be a treatise on drugs employed in treatment of skin diseases. As a matter of fact the work is more correctly to be spoken of as an exposition of the materia medica employed in the skin clinic of the University of Frankfort on the Main. While this little work may be useful to a particular group of medical students it certainly does not impress us as an example of first-class German scientific exposition. Perhaps the most striking feature of this little book is to be found in the index. Here

[1] Asst. Prof. Botany and Pharmacognosy, University of Tennessee.

we find prominently featured the names of certain drugs employed in dermatology. On the other hand, however, even the non-specialist is immediately surprised by the omission of certain other well-known drugs which by every criterion of pharmacological classification should be included in the list employed by the practitioner of skin diseases. One fails to see for instance why the author very appropriately goes into a discussion of the alkaloids atropine and pilocarpine and yet omits entirely from this work even a reference to cocaine and other local anæsthetics so widely used as antipruritics. Another glaring omission is a consideration of surface antiseptics. Pages are devoted to a discussion of tannic acid, tar, bismuth and zinc; yet no mention whatever is made of any opiates which are certainly employed both internally and externally in skin patients and there is also no special information given concerning the use of various bases for the preparation of ointments or salves.

The method of treatment of the drugs which are taken up in this work is a very attractive one. The author begins with a paragraph or two concerning the history of the medicament, then follows it up with some chemical information and thirdly summarizes its pharmacological effects. This is followed up by a discussion of its therapeutic application and finally a description of the principal contraindications and incompatabilities. It is a pity that the author did not write a more balanced work including not only the medicaments of his choice but those employed by a dermatologist of international standing.—D. I. MACHT.

A Text Book of Biological Assays. By PAUL S. PITTENGER, Ph.A., Ph.C., Ph.M., Phar.D. P. Blakiston's Son & Co., Publishers, Philadelphia. Price $3.00.

This second edition has been materially extended and is intended to adequately meet the present-day requirements for a textbook on Biologic Assays for students of Pharmacy and Medicine as well as to provide reliable information for those engaged in laboratories devoted to the biological standardization of drugs.

Since the United States Pharmacopœia X and the National Formulary V have become official all pharmacists and physicians should be familiar with the official methods of biologic assay. Dr. Pittenger has not only had a long practical experience in biological assay but his versatility and restless energy are appreciated by all who know him. All of these attributes are reflected in this book.

Preliminary Considerations, Care of Animals, Interpretation of Results, Technique and Apparatus Used are all carefully presented.

It would seem reasonable that all pharmacists and physicians who desire to intelligently discuss the biological assay of drugs would avail themselves of the opportunity this book offers in obtaining reliable information.—W. A. PEARSON.

Methods of Biological Assay. J. H. BURN with an introduction by H. H. DALE. 126 pages. Oxford University Press, London, England, 1928.

The introduction of bio-assays as optional requirements in the Ninth Revision of the United States Pharmacopœia led to an intensive study of the possibilities of bio-assays not only in America, but also in a number of foreign countries. The results obtained by workers in this field have been published in a number of journals in the various countries. The success reported with certain methods of assay led to the inclusion of physiological assays for aconite root, tincture of aconite; digitalis and tincture of digitalis; strophanthus and tincture of strophanthus; squill and tincture of squill; cannabis, extract and fluidextract of cannabis; ergot and fluidextract of ergot; and for solutions of epinephrine hydrochloride and pituitary.

About three years ago, the Pharmaceutical Society of Great Britain established a pharmacological laboratory for the biological testing of this type of drugs, and Dr. Burn was called to take charge of this laboratory. This book contains descriptions only of such methods as Dr. Burn has used personally.

In the introduction Dr. Dale, who is well qualified to discuss this subject from a number of years' work in various aspects of pharmacology and bio-assay, points out that there are five fundamental considerations for bio-assay. They are essentially comparative, and therefore require a stable standard of reference which, in every instance, should be the active principle being assayed. The biological reaction need not have a direct relationship to therapeutic effect. Differences in sensitivity of various individuals, and changes in sensitivity in the same individual at different times complicate these tests, and a suitable number of tests must be made using a sufficient number of animals to give statistical accuracy to the results. With proper care, however, the

results obtained in a physiological assay are sufficiently accurate for clinical purposes.

The book contains ten chapters and an index. The titles of the chapters are as follows: Digitalis, Strophanthus and Squill; Pituitary (Posterior Lobe) Extract; Insulin; Arsenobenzene and Allied Substances; Ergot; Adrenalin; The Ovarian Ostrus-Producing Hormone; Parathyroid Hormone; Thyroid Extract, Anterior Lobe of the Pituitary Gland, Histamine, Atropine and Antipyretics; and the Accuracy of a Result. The book is illustrated with twenty-two figures which show kymographic tracings and also cuts of methods of arranging and connecting apparatus. Particular attention is directed throughout the entire book to the errors involved in sampling, and the last chapter contains a good discussion of the elementary mathematics necessary for calculating the accuracy of a result. Three times the standard deviation of the means is suggested as a definite limit of results, which has a probability of one in 370. For ordinary pharmacological work, this appears to be a happy selection.

For the assay of digitalis, the Trevan modification of the frog method is the only one given in detail. This consists in the injection of each of twenty frogs with the same dose per kilo of a standard tincture, and of an unknown tincture of digitalis. At the end of one hour, three hours or twelve hours the mortality is determined. Subsequent series of experiments are then conducted when deemed advisable to more thoroughly evaluate in terms of the standard. If eighty frogs are used, the expected standard deviation of the results of two series is 6 per cent. The van Wijngaarden modification of the cat method, and the Knaffl-Lenz intravenous guinea-pig method are described as well as Trevan's isolated rabbit auricle method. Comparative results using these different methods are not reported, which prevents comparison of the value of these methods. In accordance with the recommendation of the Third International Conference, a hydro-alcoholic extract from standard digitalis leaves is used as the standard for this assay. Tincture of strophanthus is recommended as a standard for strophanthus preparations and crystalline Scillaren for the assay of squill.

For the assay of pituitary extract, results are presented showing that there is no serious disagreement between the pressor and oxytocic actions for four commercial extracts, but that the anti-diuretic activity was not in quantitative agreement with the results by the other two methods. The isolated guinea-pig uterus method of assay is described fully, and tracings are presented with a full description of the procedure used in drawing conclusions. For the pressor assay, however, the decapitated cat is used as the test animal. No reference is made to the pressor test using anæsthetized dogs although a great number of these assays have been reported in the literature. For measuring the anti-diuretic activity, the excretion of urine by a man rather than the more common method of using the rate of excretion from a dog or a rabbit is described.

For the assay of insulin, the usual rabbit method and the convulsive method for mice are both given.

Arsenobenzene and allied drugs are tested for toxicity by intravenous injection into the tail vein of mice, and tested for potency by their effect on the trypanosome count in the blood of infected mice.

For the assay of ergot, the only method reported is that of Broom and Clark which depends upon the paralysis of the motor action of epinephrine on the isolated rabbit uterus by the alkaloid of ergot. No reference is made to the assay of ergot by the effect on the cockscomb or upon the blood pressure of anæsthetized dogs. The cockscomb method has been adopted as official in U. S. P. X. The results by the Broom and Clark method have not been completely successful in the hands of a number of workers. Apparently, this is due to the fact that a large number of factors will interfere with the results obtained. This method is being studied in a number of laboratories in this country, but definite results appear to be due to the interaction of a number of still unknown factors.

For the assay of epinephrine no mention is made of the effect upon the blood pressure of an anæsthetized dog which is the usual method of assay. The effect upon the spinal cat is illustrated and described, but no information has come to the attention of the reviewer indicating the relationship between these two methods.

The assay of ovarian hormone upon spayed rats is described giving the method developed by Doisy and by Long and Evans.

The assay of parathyroid hormone by the effect upon serum calcium of dogs (Collip method) is given, and a method by Stewart and Purceval in which the serum calcium of

anæsthetized rabbits is followed. The latter method has not been thoroughly studied so its possibilities are still unknown.

The effect of anterior pituitary extracts in accelerating the time of opening of the vagina of a young rat is suggested as an assay method. Histamine is assayed by its quantitative action in depressing the blood pressure of an anæsthetized cat. The bio-assay of atropine is suggested by the Kühl method of antagonizing the depressing effect of acetyl-choline on etherized cats. A number of less complicated methods have been reported in the literature from time to time, and a method has been recently developed for the assay of mydriatics and of myotics which is universally applicable. These methods, however, are not mentioned in the text. The anti-pyretic action of various drugs is studied by the effect upon the body temperature of rabbits, in which the injection of a broth culture of Bacillus coli communis has caused an increase of body temperature. Quantitative figures for various antipyretics are not given, and the accuracy of this method of measurement is not reported.

Aconite is not recognized, probably because it was not recognized by the recent International Conference on Biological Standards. The assay of vitamines is not included.

This selection of methods which have been employed by Dr. Burn fills a definite need, and the book is a welcome addition to the literature of bio-assays. Only such methods are given as have been used directly by Dr. Burn, which somewhat decreases the value of the book for American laboratory workers. It is hoped that in a subsequent edition, some recognition might also be given to the bio-assay methods official in the United States Pharmacopœia. The thorough emphasis upon the accuracy of experimental results is very timely and it is hoped that this aspect of bio-assay will be considered in connection with future biological testing.—J. C. MUNCH.

NEW AND NONOFFICIAL REMEDIES.

The following additional articles have been accepted as conforming to the Rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the Rules on which the Council bases its action will be sent on application.

W. A. PUCKNER, *Secretary*.

EPHEDRINE HYDROCHLORIDE-SWAN-MYERS (See New and Nonofficial Remedies, 1928, p. 176).

The following dosage form has been accepted:

Syrup Ephedrine Hydrochloride (Double Strength)-Swan-Myers.—Containing ephedrine hydrochloride-Swan-Myers, 0.4390 Gm., in 100 cc. (1/4 grain per fluidrachm) and alcohol 12 per cent.

COD LIVER OIL-SQUIBB (See New and Nonofficial Remedies, 1928, p. 253).

The following dosage form has been accepted:

Squibb's Mint-Flavored Oil.—Cod Liver Oil-Squibb, containing 0.67 per cent of oil of spearmint as flavoring.

TETANUS ANTITOXIN, CONCENTRATED (See New and Nonofficial Remedies, 1928, p. 357).

H. K. Mulford Co., Philadelphia.

Tetanus Antitoxin (Bovine).—An antitoxin derived from the blood serum of cattle immunized against the toxin of *B. tetani*. Marketed in packages of one syringe (M-97) containing 1500 units (one immunizing dose).

OVARIAN SUBSTANCE, DESICCATED-P. D. & CO. (See New and Nonofficial Remedies, 1928, p. 290).

The following dosage form has been accepted:

Capsules Ovarian Substance, Desiccated-P. D. & Co., 5 grains.

WHOLE OVARY-LEDERLE (See New and Nonofficial Remedies, 1928, p. 292).

The following dosage form has been accepted:

Tablets Whole Ovary-Lederle, 2½ grains.

ANTIRABIC VACCINE (See New and Nonofficial Remedies, 1928, p. 363).

The Gilliland Laboratories, Inc., Marietta, Pa.

Rabies Vaccine-Gilliland (Semple Method).—An antirabic vaccine prepared according to the general method of David Semple (phenol killed). The brain and cord of rabbits killed after inoculation with fixed rabies virus are emulsified in a ball mill, after which a sufficient quantity of physiologic solution of sodium chloride containing 1 per cent of phenol is added to yield an 8 per cent emulsion of the fixed virus. The emulsion is incubated at 37.5 C. for twenty-four hours and then diluted with an equal volume of physiologic solution of sodium chloride so that the finished product contains 4 per cent of the brain and cord substance in 0.5 per cent phenol. Marketed in packages of fourteen syringes each containing 2 cc. The content of a syringe is administered daily over a period of fourteen days.

ANTIPNEUMOCOCCUS SERUM (See New and Nonofficial Remedies, 1928, p. 360).

E. R. Squibb & Sons, New York.

Antipneumococcic, Type I (see New and Nonofficial Remedies, 1928, p. 361).—Also marketed in packages of one 50-cc. gravity container.

ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1928, p. 361).

E. R. Squibb & Sons, New York.

Antistreptococcic Serum-Squibb (see New and Nonofficial Remedies, 1928, p. 362).—Also marketed in packages of one 50-cc. gravity container.

From *Jour. A. M. A.*, Dec. 8, 1928.